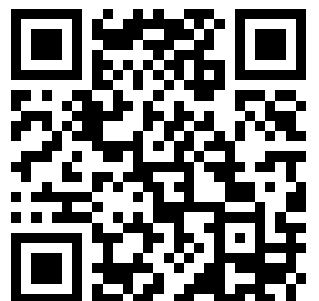

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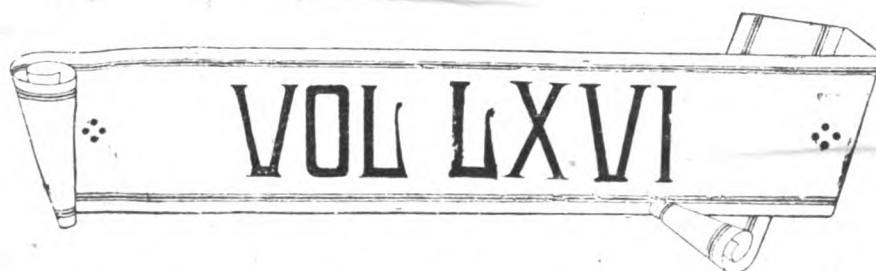
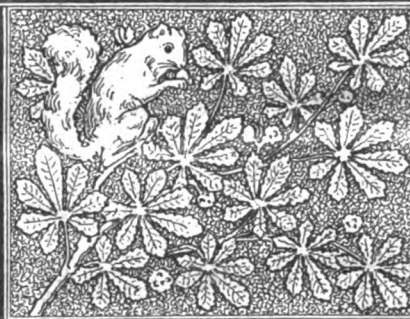
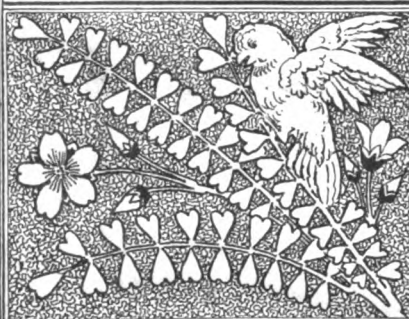
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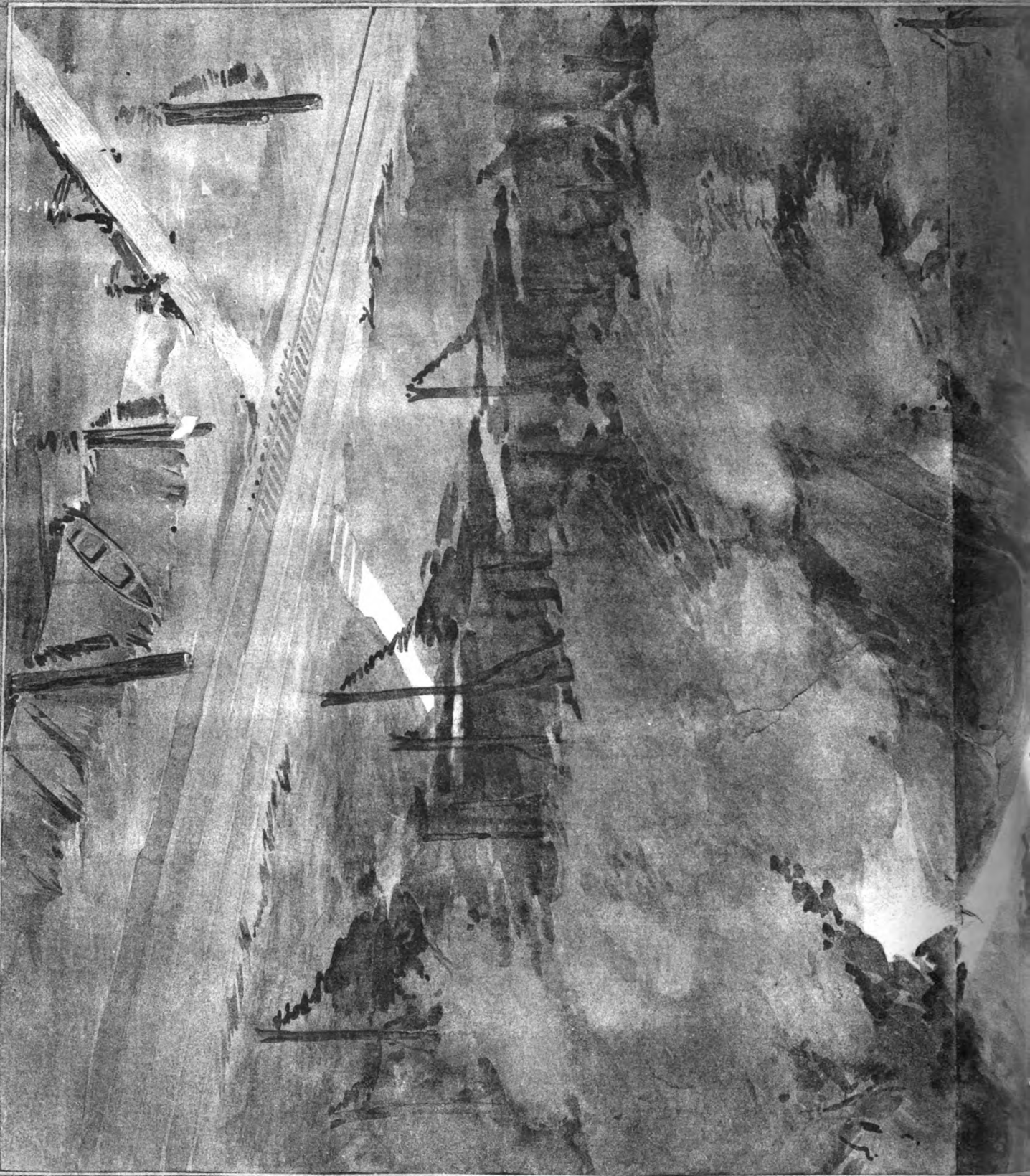
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A SCULPTOR'S STUDIO ON THE PALISADES AT WEEHAWKEN FOR MR. KARL BITTER.
FRANK E. WALLIS, ARCHITECT.

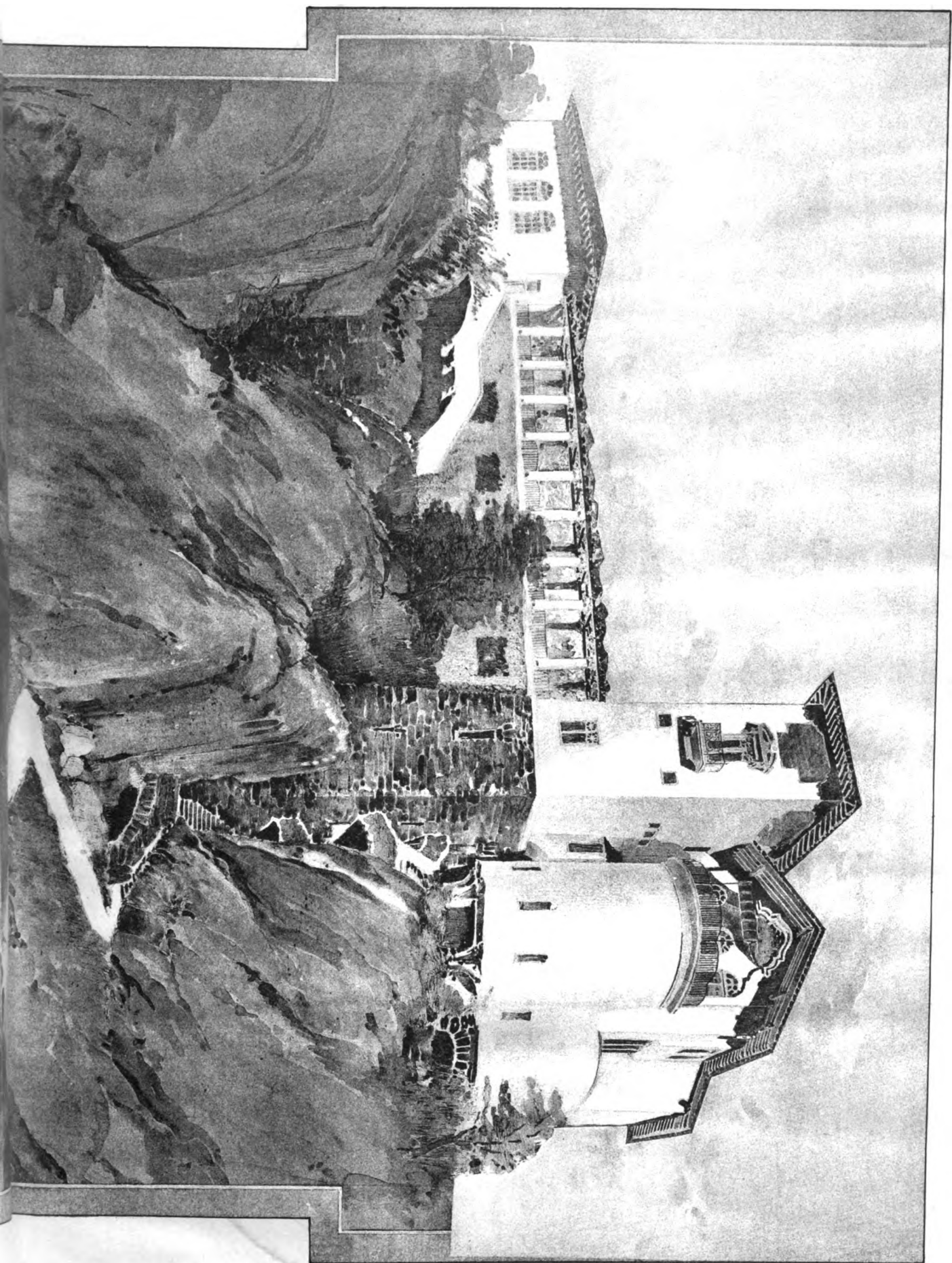
SCULPTOR'S STUDIO AT WEEHAWKEN

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THOSE who have to build scaffoldings to protect the public during building-operations should see that they are strong enough to carry any proper load, and foremen should see that their laborers do not pile up unreasonable weights of brick and stone on stagings. On the evening of the Dewey parade in New York, a shed built over a sidewalk in Fourteenth Street, intended to protect passers-by from falling objects, gave way under the weight of several tons of bricks, which had been gradually accumulating on it. Four persons were under the shed at the time. Three of them, alarmed by the sound of the cracking of the timbers, succeeded in making their escape, but the fourth, a young Bohemian woman, was caught by a mass of falling material, and instantly killed. The shed is said to have been strongly built, and it is probable that, as often happens, the laborers employed in the work on the adjoining building continued to empty hods of bricks on the platform, without knowing or caring whether they were taken away for use, or whether the load was becoming dangerous, until failure took place. In such cases, the determination of the responsibility for the accident is a difficult matter, and while, in the public interest, some one should be held to account, the process of ascertaining who is the proper one will be an interesting one.

THE new Department of Justice building, in Washington, is to be designed by Mr. George B. Post, of New York; the design by Messrs. Price & Aiken being placed second, while that by Messrs. Warren & Wetmore was placed third by the jury. Meanwhile, the execution of the New York Custom-house has been definitely awarded to Mr. Cass Gilbert, formerly of St. Paul, Minnesota, but now established in New York. There is a rumor that influential Republican politicians from New York are attempting to secure a change in the latter award, on various grounds, and that the Treasury Department stands firmly by its promises to the profession. It could hardly do otherwise, except at great cost to the Government, as there is no question in regard to the validity of the contract that it entered into with the competing architects, and it is to be hoped that no countenance whatever will be given to any scheme for setting aside the award. Where the people's money is spent in such large sums as it must be in erecting public buildings, and where it is so easy, with the collusion of a dishonest architect, to divert a substantial portion of it into the hands of persons who live on what they steal from their fellow-citizens, great efforts are always made to have its expenditure controlled by corrupt or incompetent men, and these

efforts are too often successful. It is not surprising that the statesmen who hope to divert into their own pockets, and those of their followers, a million dollars or more of the appropriation for the Custom-house, do not like the idea of having either Mr. Cass Gilbert or Messrs. Carrère & Hastings placed in charge of the work, and the energetic support, not only of the Treasury Department but of public opinion, may be necessary to protect the architect against the manœuvres to discredit or disgust him, which, if we may judge from countless previous instances, will not cease so long as a dollar of public money remains to be expended under his care.

IT appears that certain decorations in the Capitol at Washington have been treated in a manner which has excited the indignation of the Government officials, who will endeavor, at the next session of Congress, to secure the passage of a law to prevent such misdemeanors. Many of the smaller rooms in the Capitol are elaborately frescoed, in the style of fifty years ago, with the arms of the States, or other decorations, sometimes of an interesting character. Where these decorations have grown shabby with age, it seems that it has been the practice, instead of cleaning or retouching them, to scrape them off, and paint the wall in plain color. One does not need to be a devoted archaeologist to object to this way of improving the Capitol, and it may be hoped that Congress will put an effectual stop to the abuse of public property which is so common, not only in Washington, but elsewhere.

THE newspapers generally have had a good deal to say about the contract for the superstructure of the Atbara bridge, over the Nile, which was awarded last winter to the Pencoyd Iron Works, of Pennsylvania, in preference to English contractors. A patriotic member of Parliament having demanded an explanation of the affair, the Government furnished documents which have much interest. The bridge was a military affair, a part of the railway line to Khartoum, which had been undertaken to secure the occupation of the Soudan. Lieutenant-Colonel Gordon, of the Royal Engineers, who had charge of the bridge-work on the ground, sent a description of what was wanted to Colonel Western, the representative of the War Department in London, requesting him to consult with a Mr. Robertson in regard to the design; and General Kitchener, who was then in London, explained to Mr. Robertson the strategic necessity for quick completion of the bridge. Mr. Robertson drew up plans and specifications, which were forwarded to Egypt. On their arrival, Colonel Gordon saw at once that they could not be carried out without false-work, built up from the bed of the river, which the Nile floods would assuredly sweep away. He therefore telegraphed to Colonel Western that the bridge must be capable of being erected without false-work in the river. Meanwhile, Colonel Western had been studying the conditions, and had written that it would be impracticable to get the bridge built in less than a year; while Mr. Robertson thought that two years was the least practicable time, and suggested that a ferry might be established for use until the bridge could be made ready. Colonel Gordon, who understood the military necessity for its completion before the spring flood, then took the reins into his own hands, and "privately" communicated with American bridge-builders. In reply to his communication, the Pencoyd Company telegraphed an offer to deliver the bridge in six weeks. Colonel Gordon immediately reported this offer to the War Department, advising Colonel Western to accept it. The latter still demurred, saying that the Pencoyd bridge could not be built without false-work, but seems to have changed his mind on further inquiry, and the order was given. The exact date of giving the order is not mentioned, but it seems to have been about the first of February, 1899. On the twenty-fifth of February the first shipment of steel was made from Pencoyd, and the rest of the bridge was sent on the fifteenth of March. The contract price for the bridge, including only the superstructure, the piers having been put in meanwhile by an Italian firm, was twenty-eight thousand dollars. The lowest bid from English contractors on the same specifications was sixty-five thousand. The work and materials at Pencoyd were inspected by an officer sent from England for the purpose, and were pronounced very satisfactory.

THE School of Drawing and Painting of the Boston Museum of Fine-Arts makes an interesting report for the year 1898-99. It is hardly necessary to say that the school has long outgrown its preliminary stage of abundant lecturing and rather meagre painting, and its two hundred pupils now not only draw and paint to their heart's content, but have, in the monthly competitions, an opportunity to judge of their own progress which is of great value. It is rather singular that only twenty-seven of the pupils, or about fifteen per cent, are men. This need not mean that the school should be given a lower place than the schools of fine-art frequented mainly by men, for there are not many men who can compete successfully with the best women-artists, but the fact should have an interesting relation to the results of school-work. In one respect the preponderance of the feminine element should certainly be advantageous. The curse, we might almost call it, of art in this country is the propensity of people who have drawn a winter in a life-class, and learned the distinction between a hog-tool and a blender, to abandon themselves to the idea that, as artists, they are exempt from the rules applicable to common mortals, including those which inculcate industry as a requisite to success. Among women, this sort of folly is not common, and nothing is better suited to reduce the conceit of a silly young artist than to see his limping figures and staggering outlines cast into the shade, month after month, by the work of the modest and painstaking girls over whom he had assumed airs of superiority. It is possible that the dislike of women for contests of any kind might make the competitions in a school in which they predominate so greatly rather languid affairs, but in the Boston school there are now prizes and scholarships numerous enough, and valuable enough, to stir up emulation, and the number of these is likely to increase. The salutary influence exerted by these incentives is indicated by the fact that a picture painted by the present Longfellow Scholar, Mr. W. H. Haskell, during the first year of his scholarship, was admitted to the Paris Salon of this year.

IT is, perhaps, fortunate that community of philanthropic interest is an actively real and not merely a sentimentally passive feeling, for we cannot perceive that there is any commercial advantage accruing to the British Fire-Prevention Committee, which is mainly the creation of Mr. Edwin O. Sachs, from aiding in the establishment at St. Petersburg of a testing-station conceived on lines similar to those of its own establishment in Regent's Park, London. To enable the Russians to prove to themselves, or to prove it to them, that it is needless to allow thirty-five million dollars' worth of village buildings to burn up each year is, philanthropically considered, a most admirable thing; but why Mr. Sachs and his British friends should take the trouble to do so does not appear very clear. Theoretically, perhaps, testing-stations operating on similar lines at each National capital afford a very scientific means of procuring a series of records, but it seems rather odd that such work should be undertaken by a private corporation, and a foreign one at that, rather than by each Government on behalf of its own people. Surely the conducting of fireproofing tests is not so lucrative an employment that it can earn dividends for holders of the corporation stock. Whatever the motive may be, and however the operation is "made to pay," the new Russian establishment can hardly fail of being immensely useful to Russian interests.

THE most interesting of the recent successes of science is certainly the freezing of hydrogen, which has been accomplished by Professor Dewar. For some time, Professor Dewar has been experimenting with liquid hydrogen, and has been able to obtain it in quantities of half a pint or so at a time. In the course of his experiments, he observed that a white, spongy mass, like frozen foam, often formed on the inside of the receptacles containing the hydrogen. He supposed at first that this white solid must be frozen air, or, perhaps, a sponge of frozen air containing free liquid hydrogen, similar to the sponge of frozen nitrogen, containing liquid oxygen, which forms under some circumstances in freezing air. The temperature at which the new substance melted showed, however, that it could not be frozen air; and Professor Dewar arranged a new apparatus, by which a tube of pure hydrogen was surrounded by liquid hydrogen, the latter being cooled by

evaporation. On releasing the pressure on the liquid hydrogen, so that evaporation could begin, the gas in the inner tube was seen to condense, and collect at the bottom, and, soon after, a crust of frozen foam formed at the surface of the hydrogen, while all below was converted into a transparent blue solid, which remained in place when the tube was inverted. This experiment proves the error of the opinion long held by chemists, that hydrogen in the solid form would be found to be a metal, and shows that it is similar in constitution to other gases. Professor Dewar was able to determine the temperature due to the evaporation of the liquid hydrogen to be about sixteen centigrade degrees above the absolute zero, while the density of the liquid at the boiling-point is about one-fourteenth that of water. The density of the solid could not be ascertained, on account of the spongy condition of the upper portion. Having thus, so to speak, conquered hydrogen, Professor Dewar will, it is said, turn his attention to helium, a lighter gas even than hydrogen.

IT is some time since the public has heard from the "*Turbinia*," the wonderful boat, driven by something like a dozen propellers, all actuated by steam turbines, and revolving at great speed, and a paper read by Mr. Charles Parsons, the builder of the "*Turbinia*," and the inventor of the best-known form of steam-turbine, before the British Association at its recent meeting, is of interest. The "*Turbinia*" having shown the practicability of using the new form of engine for navigation, Mr. Parsons suggests that his system is peculiarly applicable to the vessels which cross the English Channel. As the harbors on the coast of the Channel at its narrowest part are shallow, it has been necessary to use side-wheel steamers of light draft to run between them, and the trembling of a side-wheel steamer, driven at high speed, no doubt contributes something to the effect of the cross-currents in producing the seasickness for which the Channel passage is so much dreaded. Mr. Parsons points out that the steam-turbines run without vibration, while the propellers driven by them, being small, well submerged and numerous, push a boat with a smooth motion, like that of a sailing-vessel. It would be easy to secure a speed of thirty knots an hour with steam turbines on a vessel as large as the average Channel boat, and Mr. Parsons thinks that in this way not only would the duration of the sea-passage be materially shortened, but the voyage would be so much more comfortable that the turbine boats would become popular. The competition between the various Channel lines is so great that it seems quite likely that some enterprising company may try the venture before long. At the worst, the turbine boats would cost much less than the old double steamer, "*Castalia*," now abandoned, which was designed to reduce the dangers of seasickness, and, unlike the "*Castalia*," they could be utilized for river service in case they proved unprofitable on the Channel.

THE sale of historical buildings in England by their unromantic, not to say unfeeling, owners goes on rapidly. This week the estate of Chepstow, or Striguil, is to be sold at auction for the account of its present owner, the Duke of Beaufort, whose ancestors came into possession of it nearly four hundred years ago. The castle itself is Norman, being one of the five strongholds erected under the Conqueror which still remain. The oldest portion of it is said to have been built by William Fitz-Osbern, the friend and confidant of the Conqueror. It came later into the possession of the Earls and Dukes of Norfolk, and from them passed, through the Herberts, Earls of Pembroke, to the Somersets, the ancestors of the present owner. Who will be the next possessor remains to be seen. It is singular that, while in this country a Colonial mansion, dating, as some of them do, from the middle of the seventeenth century, is generally an object of great pride to the descendants of its original owners, a similar object in England seems to be regarded as a burden, to be got rid of as soon as possible. Whether this indicates that what Mr. Ruskin calls the "Lamp of Memory" is burning low in English bosoms at present, or whether the people who own the historic castles do not find as much satisfaction in communion with their ancestors as their predecessors did, we will not pretend to say, but, unless some of the present representatives of the great English families are much belied, it is conceivable that their forefathers might utilize an occasional sojourn at their ancestral seats to give them ghostly counsel.

THE PALACE OF THEODORIC AT RAVENNA.



Escutcheon from the Monument to Alexander III, Moscow, Russia.

RAVENNA is assuredly one of the most important of the monumental cities of Italy. Ever since the Middle Ages it has piqued the curiosity of students. Its architecture, sculpture and painting have been made the object of serious study, while the Italian Government takes the greatest care of its remaining monuments. A small provincial city, to-day almost deserted and half dead, Ravenna served as the asylum of the last of the emperors of the Roman Empire, as a residence for the kings of the Ostrogoths, and as a capital for the Byzantine governors of Italy; and by the great memories that it evokes, by the monuments of a glorious past which it preserves, it still retains a singular importance, which increases from day to day, inasmuch as the love and knowledge of Byzantine work goes on increasing. So a French historian did not exaggerate who wrote that at Ravenna better than in the Orient, better than in Constantinople itself, one can study the Byzantine art of the fifth and sixth centuries, and here, better than at Rome, can be seized and understood the living influences of the Christian art of the East preserved in so remarkable a degree throughout Italy.

The Byzantine monuments of Ravenna are, generally speaking, in a bad condition of preservation. That jewel [SS. Nazario e Celso] which is called the Mausoleum of Galla Placidia, which is the monument that is best preserved, during these later years has been struck by lightning, which effected the downfall of several portions of the mosaic, — repaired about 1893. On this occasion was drawn up a general scheme of isolation to which execution was partially given. The Mausoleum of Galla Placidia, as I said, is the best-preserved monument at Ravenna (even the Metropolitan baptistry being found in fair condition), but does not resemble the famous Palace of Theodoric, which, like his mausoleum, has been lately the object of interesting investigation; that is to say, it is only within the last few weeks that has been finished an investigation about the palace, the results of which I hasten to communicate to you. And, in the first place, is there indeed historic certainty that the remains of the Palace of Theodoric, so-styled, really form portions of the royal residence of that prince? Everybody will answer in the affirmative, but it would be a good thing to discover if current opinion has a solid and unassailable foundation. The question, so far as I know, has not yet been asked, at least in a review, and I do not believe it useless to write a word about it in your excellent journal. Perhaps this word will be more interesting for your readers after I have given them some knowledge of the works at the palace.

At Ravenna there exists two palaces of Theodoric, so-called — one on the right wall of the Church of St. Apollinare Nuovo, and here it is in mosaic; the other on the Strada del Corso and the Porta Alberoni, and here the relics are in masonry. The mosaic at St. Apollinare Nuovo has a majesty which the ruined stonework does not present. The Church of St. Apollinare which is called "Nuovo" to distinguish it from St. Apollinare in Classe, outside of Ravenna, is a long basilica with two rows of columns; the sides of the nave are divided in their height into three portions, lined with mosaic, the first of which represents a procession of twenty-five personages who are departing from a palace in the style of the Roman decadence and this is called the Palace of Theodoric. The mosaic which represents this palace dates back to the time of the full flower of Byzantine art, the sixth century. The palace is represented geometrically. A four-column portico in the middle of the façade is higher than the porticos on the sides, above which are arranged a series of windows which almost form another portico, or, to speak properly, a pseudo-loggia; and the columns of the porticos, as well as those of the pseudo-loggia, are surmounted with small segmental arches, while the arches of the porticos are enriched with curtains, as if they formed parts of an Oriental palace in Persian style. Foliage and festoons held by angels give to this façade the *cachet* of exquisite taste; and the pediment, underscored as one might say, emphasizes the middle portion, and bears on its architrave, very clearly, the word "PALATIVM." The capitals of the columns are carefully worked and form an appreciable contrast with the cornices, which are light, without mouldings and without picturesqueness. In short, while the ensemble is majestic because of its richness, it is in no way a work of art, its effect being less than mediocre.

As to the actual palace of real stonework, it is represented by a portion of wall, where the artistic note is given by a sufficiently elegant loggia on the first story (the remainder, as it exists, has only a single story). On the ground-floor we see the middle doorway, which has by no means a lordly air, and on the side two arches. In fact, this relic of the Palace of Theodoric, which forms one angle,

and of which I have tried to give you an image of the most interesting side, has not that air of Byzantine splendor which fancy is pleased to bestow upon a royal residence. A very fine capital, with a cross of Byzantine style, that has arms incurved at the extremities, giving it the effect of a jewel in a large velvet box, has been raised during the last excavations, as well as a porphyry urn, which has been set up against the façade of the palace which we speak of as the principal one. If, now, we take the trouble to compare the mosaic in St. Apollinare Nuovo with the remains of the royal palace on the Strada del Corso, a singular discovery awaits us: an enormous difference exists between the two palaces of Theodoric, or, to speak more strictly, between the mosaic-work at St. Apollinare and the remains on the Corso, both of which we would like to consider as the royal palace of Theodoric. And yet, tradition, the historians, the chroniclers, cite as the ruins of the Palace of Theodoric these very walls on the Strada del Corso, and even tradition itself says that the palace in mosaic represents this very building, and so the royal palace. History assures us that the Palace of Theodoric covered an area of some two hectares, but in the course of ages, and because of indifference to antiquities, all has been destroyed, and to-day, with all our knowledge, we only know that the palace was built where now rear themselves the few remains of which we are speaking. In fact, the historiographer Agnello, a priest of Ravenna, who left a very curious and valuable book on his native city (he lived in the ninth century and Theodoric died in 526), wrote, three hundred years after Theodoric must have built the palace under discussion, that this palace was near the Church of St. Martin in Caelo Aureo ("*juncta ecclesiam S. Martini in caelo aureo*"). This church was really the present St. Apollinare, which formerly was called St. Martin's. The testimony of Agnello is fortified by a "*bolle*" of Alexander III (†1181), which said the same thing as Agnello, whose testimony, moreover, had been confirmed before this by another pontiff, Paschal I (†824). One would never come to the end of citing documents which bear testimony to the fact that the Palace of Theodoric was built in the locality where these masonry ruins now appear, but I believe that I have given enough in the notes which I have exhumed. I will only add one more bit of testimony, which I extract from the last excavations carried on at the palace. In excavating about these remains in the "*orti*" Monghini, on the Strada di Porta Alberoni, there have been discovered some very remarkable pavements in mosaic of the Alexandrian character, which precisely covered the space now occupied by the gardens which are found between the city walls, the Strada di Porta Alberoni, the ex-convents of St. John the Evangelist and St. Apollinare.

I have said that of the Palace of Theodoric we, with all our knowledge, only know the locality where it was erected. Even down to our own days no one misdoubted that the remains on the Corso were those of the Palace of Theodoric. It is only from the time that serious studies of the Byzantine monuments were begun that the ancient traditions, supported by historians and chroniclers, excited some misgivings and people began to doubt whether these ruins might not be a work of later date, added to, or made out of, the ruins of the Palace of Theodoric, belonging, perhaps, to the time of the Exarchate. This doubt, which only the other day stood for an audacious novelty, has, in consequence of the works which have lately been carried out, become an unassailable verity, and it is this fact which interests students of Byzantine art. The recent excavations have brought to light the fact that between the levels of the foundation of the walls on the Corso and that of the mosaic foundation in the "*orti*" Monghini, which belong to the palace, there exists a difference of about one and one-half metres, and this can be accounted for only by acknowledging a difference of date between the two constructions. Besides, it must be added that the walls on the Corso are built with very ordinary material, and this fact is not in harmony with the idea which was entertained by everybody that this Palace of Theodoric was really worthy of a Roman emperor, both in the way of grandeur and in richness.

So, it is only by chance that the remains on the Corso have been called the ruins of the Palace of Theodoric, and this being granted the matter of the differences of the two palaces of Theodoric is explained. The mosaic in St. Apollinare is indeed the Palace of Theodoric. Moreover, the word "PALATIVM," which is read on the architrave of the middle feature, was only used in the Middle Ages to indicate the royal residence of a monarch. Nor is it reasonable to suppose that in a basilica of so solemn a character as St. Apollinare Nuovo, close by the real Palace of Theodoric, one would try to execute a palace *de manière*, that is to say, after a fashion wholly different from the real one. Moreover, it can be added that the mosaic representation finds its support in the descriptions of the real palace which ancient writers have left us. Theodoric erected the palace with porticos, wrote John Diacono, and, in the openings of the porticos hung "*vella*," that is to say, the curtains of Oriental and Roman palaces. The testimony of Agnello himself witnesses to the authenticity of the mosaic-work in so far as that it reproduces the Palace of Theodoric, and Agnello mentions a portrait of the king in brilliant mosaic-work upon the façade between the figures of Rome and Ravenna, which, in all probability, was destroyed at the time when the Arian Church passed into the control of the Catholic branch. In fact, the new cult could not admit on a Catholic church the existence of a portrait of an Arian prince such as was Theodoric, and it can be taken for granted that everything which had about it the stamp of Arianism was effaced from the Catholic churches; and in

St. Apollinare Nuovo we see, on the left, the Virgin with Jesus being adored by the Magi, which gives the proper tone of Catholicity to the decoration of the church, for the Arians did not admit the dogma of the Incarnation.

I hope what I have said will illuminate a question of some interest, and I hope that the excavations and future researches will only fortify the conclusions to which my study has brought me.

Returning to the works themselves, which have rendered possible the present researches, I will inform you that the so-called Palace of Theodoric has become a very modest civic habitation, and the Ravenna savings-bank, in consequence of a decree of expropriation, has become its proprietor; but, under the laws, the Savings-bank cannot sell this piece of real-estate, and under these conditions, although private purchasers have made their offers, the Savings-bank has yielded its property to the Government at the price of 5,200 Italian lire, the price which it had itself paid. It is almost certain that if the so-called Palace of Theodoric should come into the hands of a private person it would become the object of a more or less disgraceful speculation. It is plain, then, that the purchase of this interesting relic, which, even though it be not the Palace of Theodoric, is nevertheless an historic relic, was made not only to assure its preservation, but also for the purpose of carrying on further explorations about its site. Explorations have been carried on since 1897, and in these later days the façade has been restored to its first aspect, respect being paid to primitive lines and looking to the eventual destruction of the little houses which conceal it from view on the side of the Strada di Porta Alberoni. A little iron railing has been built about this monumental ruin, and to-day all those who visit Ravenna will be satisfied with the works carried out at the so-called Palace of Theodoric, of which, whatever it may be, the monumental aspect is calculated to impress those people who have a mind open to the impressions of beauty; yes, beauty—in using the word I do not exaggerate, for these two side-walls on the Corso and the Porta Alberoni, vigorous and energetic in tone, disjoined by the pseudologgia of the first story and the openings of the ground-floor, have the lines of an architectural picture, of sombre effect, it is true, but yet of exquisite beauty.

ALFREDO MELANI.

AN ANGLO-SAXON CHURCH.

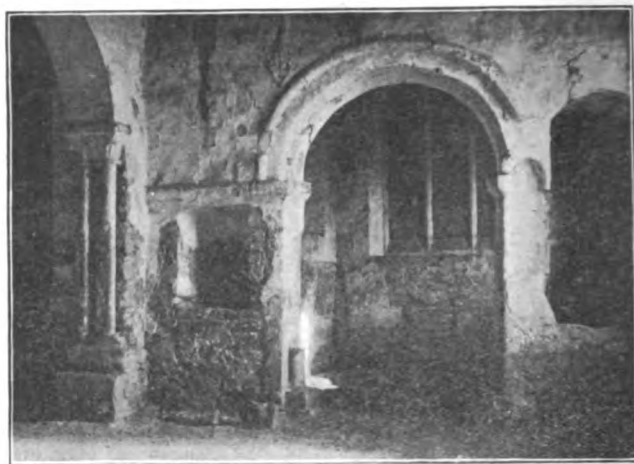
THE ancient Church of St. Martin, at Wareham, is considered by the best authorities to be undoubtedly of Saxon origin. The town was once the seat of Anglo-Saxon kings; it had a strong castle and a mint of its own; and its so-called walls (earth-mounds) still surround it and cross the main street where, probably, St. Martin's and St. Mary's Churches formed part of the north and south entrances, overlooking the gates. The priory near the river on the south side of the town was founded by St. Aldhelm, and given by Robert Bellemont, Earl of Leicester, to the Benedictine abbey of Lyra, in Normandy, whose monks formed the congregation dedicated to St. Mary. In the reign of Edward III, it fell to the Crown, but was restored to the Church by Richard II, who gave it to the prior



St. Martin's, Wareham, Dorset, Eng.

of Montgrace, an abbey of the Carthusians in Yorkshire, after which it reverted again to Lyra. Henry V bestowed it upon the Carthusian monastery at Shene, Surrey, with the advowsons of four of the eight churches which the city then possessed. The ramparts are intersected by two streets at right angles, after the Roman fashion, passing through the town, which is further protected by two rivers, crossed by old stone bridges, the Trent and the Frome. Thus there is every evidence, besides that of parts of the church itself, that St. Martin's was built by the Saxons; and although it is not as fine and compact an example as the church of Bradford-on-Avon (see *American Architect*, February 18, 1893), it is none the less most interesting. It is a tall, square building, with a short, high chancel, and a projecting square porch under a gable-topped tower. The chancel-opening is much larger than that at Bradford, and we miss the long-and-short work and the exterior arcading, which are so

conspicuous a feature of the latter church; but the Norman arch is evidence of the remodelling of the old Saxon church in the eleventh or twelfth century. Indeed the Purbeck marble shafts and carved capitals supporting the arch which divides the nave and aisle are evidently of the twelfth or thirteenth century. On the south side, the Early English window has been filled with colored glass of the



St. Martin's, Wareham, Dorset, Eng.

poorest kind—the work of the custodian, a wheelwright or carriage-builder hard by. Is it not time that the State should take over all ancient buildings? Imagine a man, churchwarden or other, skilled or unskilled in architecture, being allowed to fill up the window of an old church with trumpery glass such as one sees in a fifth-rate villa residence to mask the view of the weekly washing which is pegged up in the backyard. The window was glassless until lately, and our friend evidently takes much honor to himself for this “restoration.” On the north side of the chancel is a circular-headed loop window, which is undoubtedly one of the original widely-splayed lights. The east window is walled up; the tracery is Perpendicular. A large squint bounds the chancel-arch on the north side, and on the south side is an irregular opening, probably intended for the pulpit. Above are traces of colored decoration.

The north aisle is divided from the nave by an arcade of two bays, and against the north wall of this aisle is an altar-tomb to Robert Carruthers, Surgeon Royal Navy, and his wife, who “died of a Typhus Favour.”

Part of the Church of St. Mary was rebuilt in 1841, when it was considered more economical to pull down the nave than to repair it, as was also done at St. Mary's Overy, Southwark; in both cases with disastrous results. Two effigies of cross-legged knights were removed from a side-chapel and placed in the chancel; there are also a double piscina and a triple sedilia. Here too on the wall is an earthenware plate, with the sacred monogram in blue, probably French, and possibly used for the blessed bread or Holy Loaf—the *pain bénit* of the French Church. In a small chapel dedicated to St. Thomas of Canterbury is a five-wick stone lamp.

St. Edward's chapel is thought to be a reproduction in stone (twelfth century) of the wooden, or wattle, chapel where St. Edward, the Saxon king and martyr, was originally enshrined after his murder at Corfe Castle by his step-mother, Elfrida. A still more precious relic is the twelfth century leaden font. It has richly-decorated arcades round the sides, under which are the figures of the Twelve Apostles. It is one of the finest examples of an early leaden font in England.

S. BEALE.

FOREST MANAGEMENT IN MAINE.¹—I.

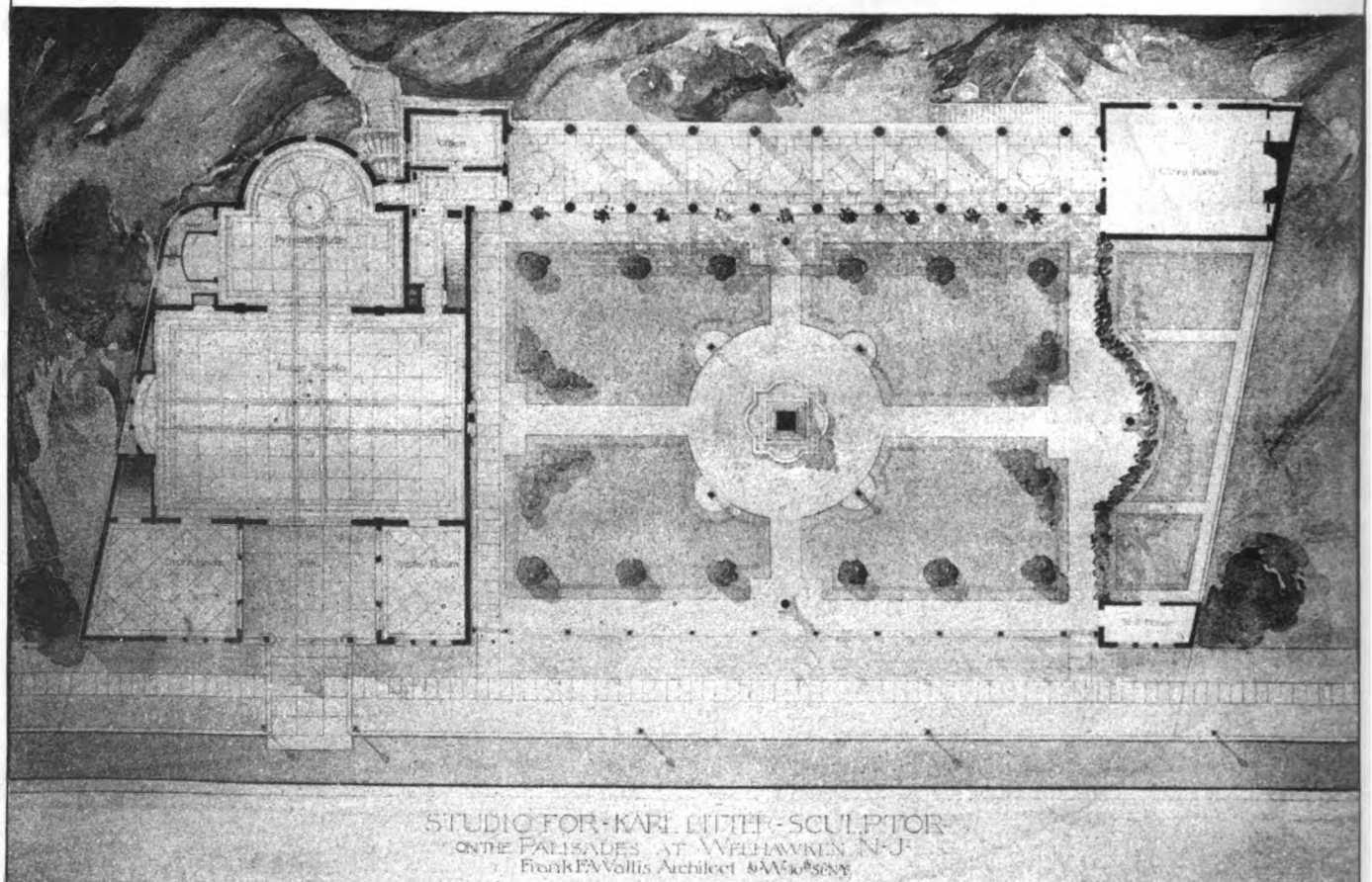
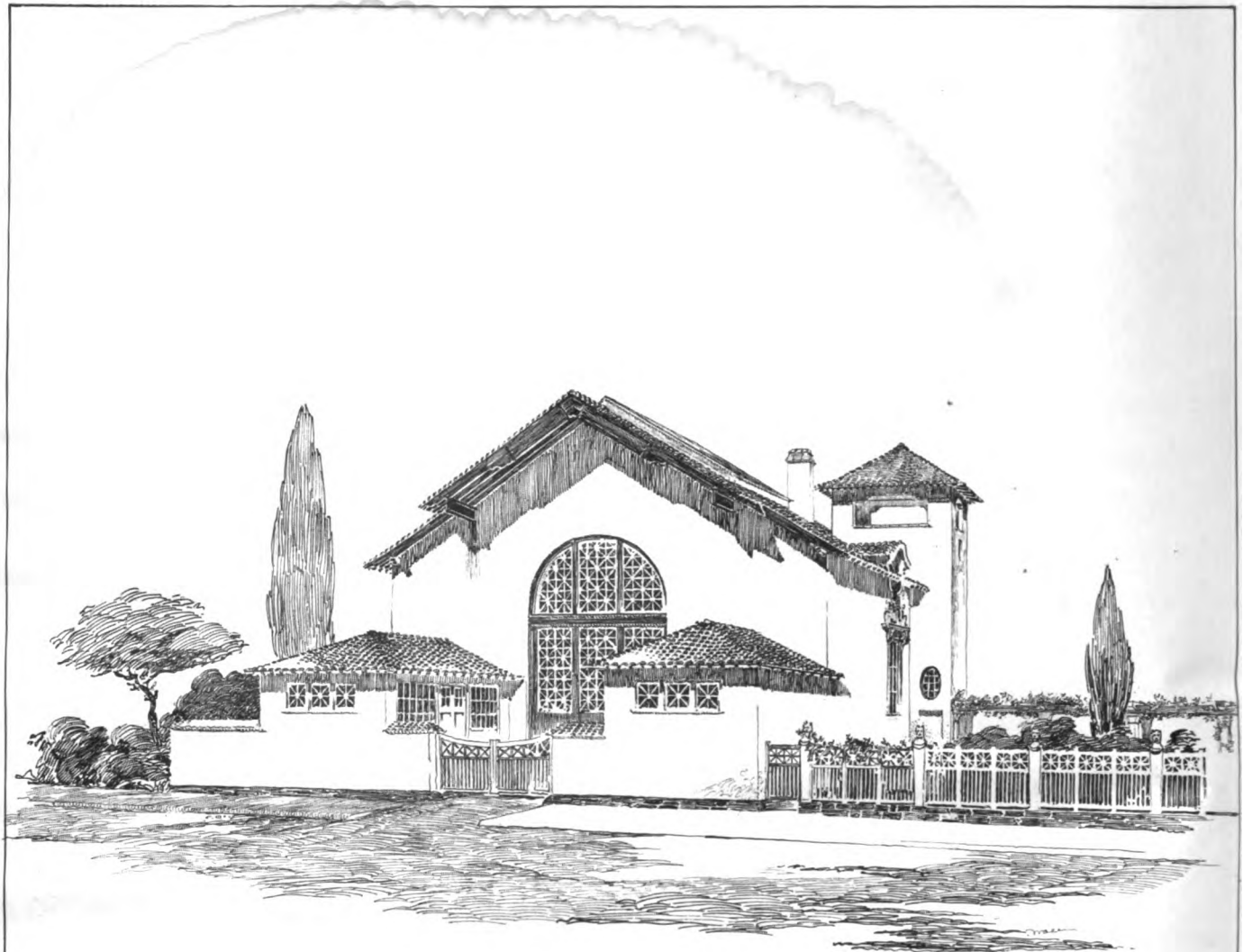
IN any broad view of the forest interests of Maine we should begin with topography. The ruling topographical feature of the State is a broad plateau² stretching from west to east, dividing its area into a northern and a southern slope. Of these slopes the northern is the smaller, embracing the watershed of the St. John River. The southern slope is a belt along our entire coast-line, on the average 140 miles wide.

A further feature to be noticed is the fall of the divide from west to east, from the foot of the White Mountains, in New Hampshire, to Mars Hill, on the borders of New Brunswick. The Rangeley Lake system at the west is between 1,400 and 1,500 feet above sea. Moosehead Lake, at about the centre of the line, lies at 1,020 feet. The highest point on the boundary between Maine and New Brunswick is about 500 feet above sea-level.

The botanical features of the State hang largely on the topography. In the southwest, for instance, a large district, low-lying

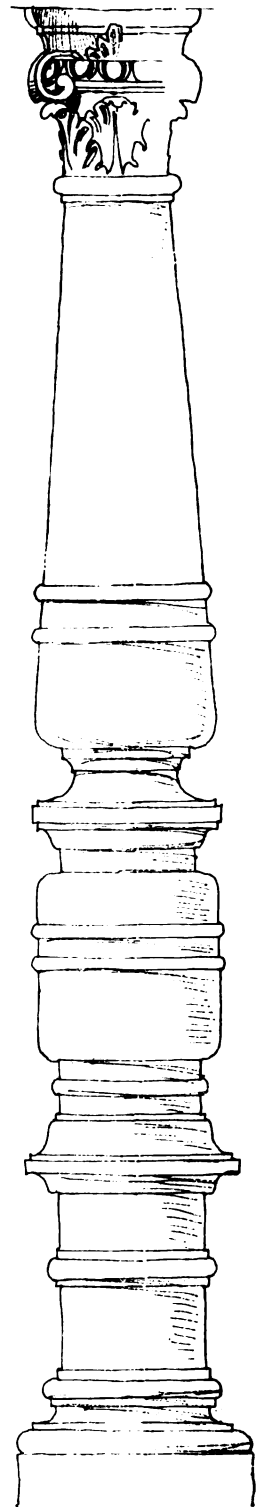
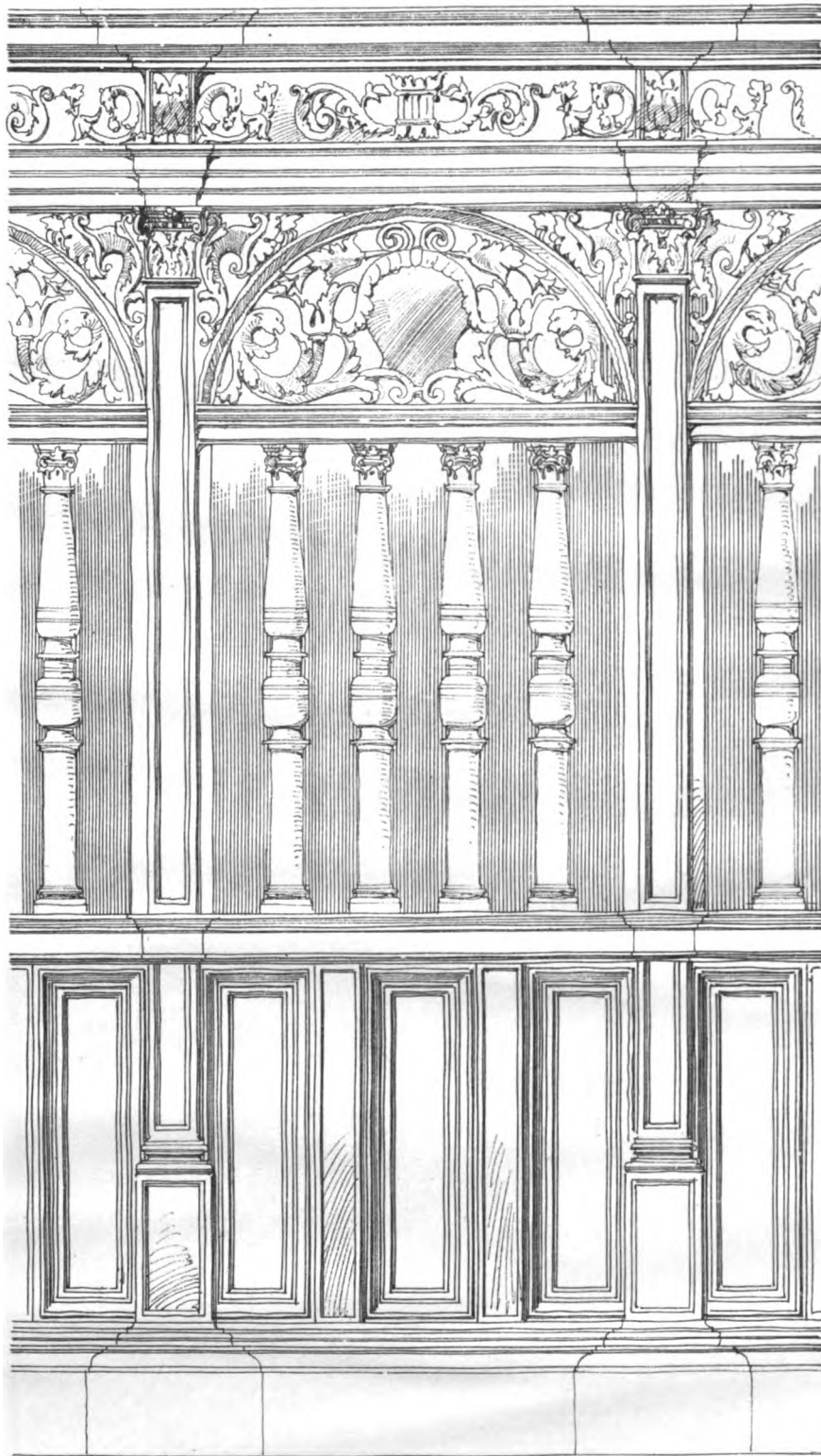
¹ A paper, by Austin Cary, A. M., Forester to the Berlin Mills Co., read before the Boston Society of Civil Engineers, May 10, 1893, and published in the *Journal of the Association of Engineering Societies*.

² For the original statement of these relations, and valuable information as to Maine's natural features and resources, see Wells' “*Water-power of Maine*.”



A STUDIO FOR KARL BITTER, SCULPTOR, WEEHAWKEN, N. J.
FRANK E. WALLIS, ARCHITECT.

WILLIAMS PUBLISHING CO., BOSTON



DETAILS
STONE

SCREEN IN "ST MÈRE" PARIS

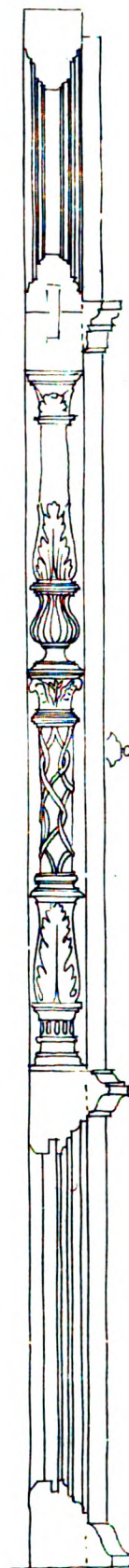
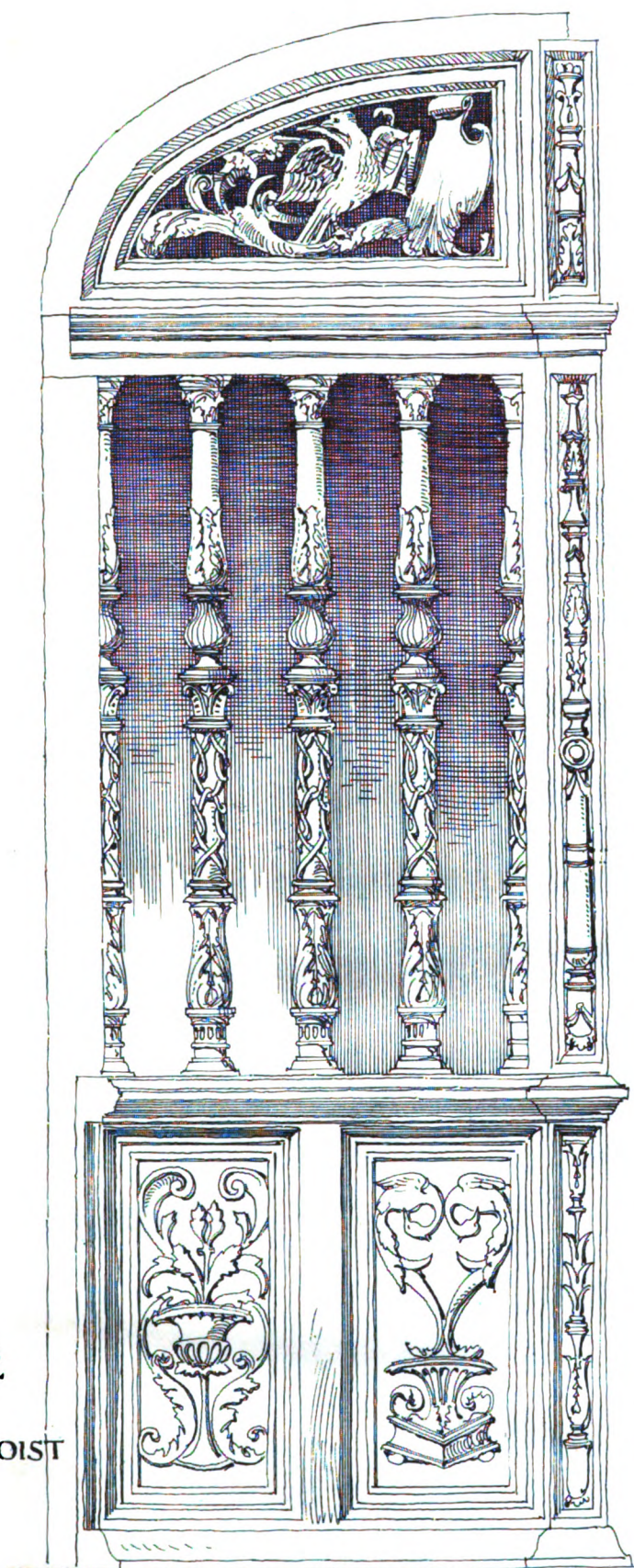
SCALE

1 METRE



OF SCREEN
Y, PARIS

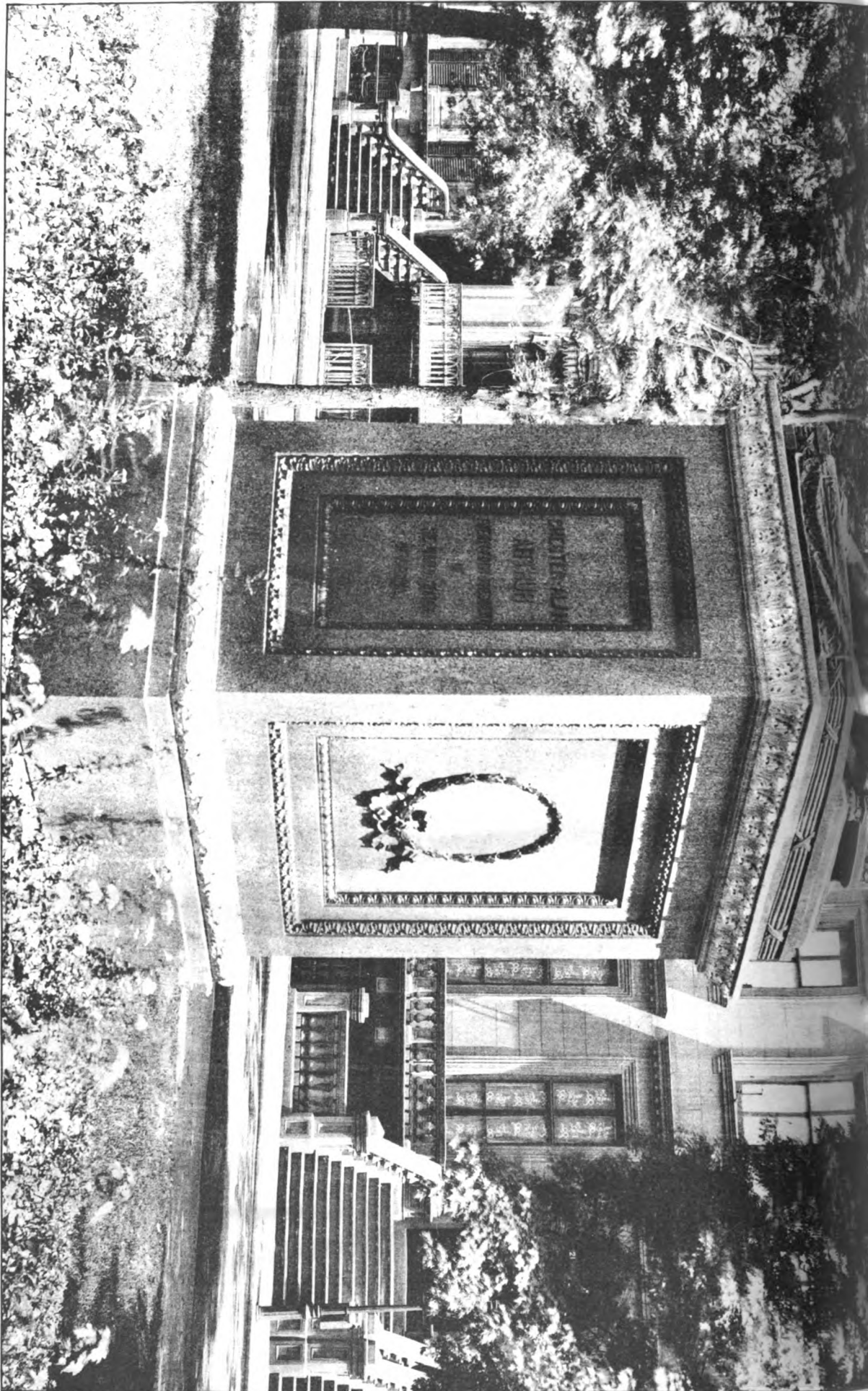
DOOR IN "EGLISE
E L'ABBAYE",
OUBS, MT ST BENOIST



SCALE -

1 METRE

W.T. PARTRIDGE, del.



STATUE OF CHESTER A. ARTHUR, MADISON SQUARE, NEW YORK, N. Y.
GEORGE E. BISSELL, SCULPTOR.

REPRODUCED BY THE NATIONAL ARCHIVES

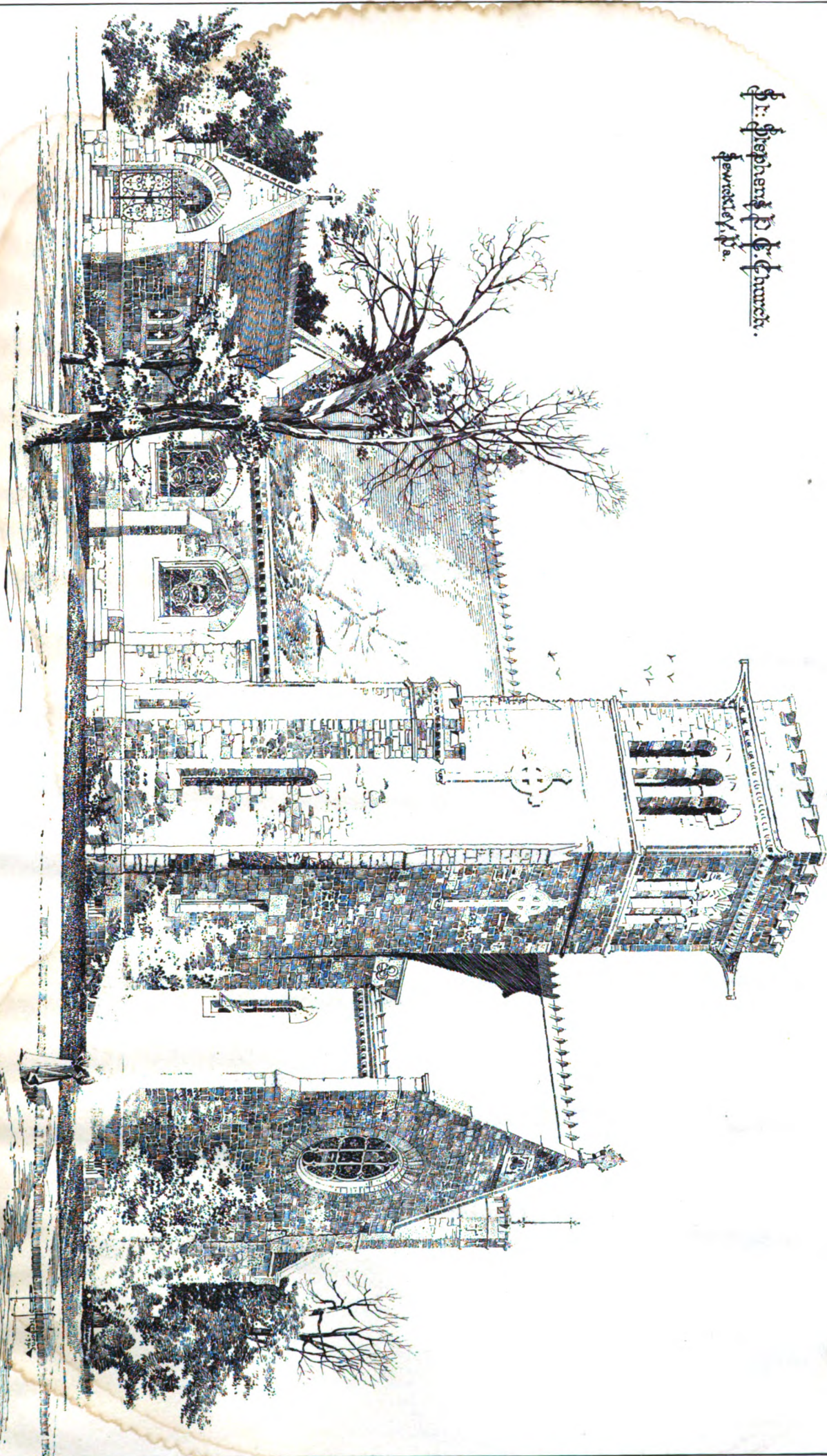
AMERICAN ARCHITECT AND BUILDING NEWS, SEPT. 30, 1899. No. 1240

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St. Stephen's R. C. Church.
Pittsburg, Pa.



Baehner and East, Architects.
Pittsburg, Pa.

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and with a mellow soil, is united botanically with Massachusetts and Southern New Hampshire. Oaks are prominent in the woods here, and white-pine was the staple of the original soft-wood timber. On the other hand, the plateau country presents a Canadian flora. The hardwood trees are the birches, maples, etc., characteristic of a colder region, and spruce forms the largest and most valuable part of its soft-wood timber. In the west, where the boundary of the plateau is sharp, and where it has its greatest elevation, the contrasts in timber stand are greatest. Eastward, with the easier topography, there is more variety and mixture.

We must next observe that a large part of the State of Maine is destined to remain permanently wooded. The bulk of our population is now and will continue to be located in the lower southern part, where milder climate, abundant water-power and areas of fertile soil offer advantages. Again, there is a strip of land with easy topography and very fertile soil along the New Brunswick line in Aroostook County. Out of these areas indeed a large proportion is wooded, and some bodies of land included within them are of such a character that they never will be inhabited or cultivated. For the great district remaining, about half the area of the State, the same thing is true. It is high in the first place, and the season of growth is short. As a rule, the topography is rough and the soil poor. Considerable of it, indeed, is little more than ledges and piled-up rocks.

Half the area of the State, then, about fifteen thousand square miles, seems destined to be permanently forest. This is an area twelve times as large as the Black Forest¹ in Germany. The States of Massachusetts, Rhode Island and Connecticut, taken together, just about equal it in area. The importance of this body of land as a source of wood material is evident from the statement. The relation to it of business development will be seen later on.

Since its settlement, Maine has always had a lumber business; that is to say, lumber has been cut and sawed here not only for local consumption, but to export to other communities. Many of the earliest settlements in the State were built about accessible mill privileges, and later movements of population have in considerable measure been related to woods and mills.

The development of the lumber business has proceeded according to evident laws. In the natural condition pine was at once the largest, most valuable and most accessible timber that the State possessed; pine, therefore, was the first timber to be taken. It was taken, too, where most easily accessible, along the coast and on the banks of the rivers, where it could be floated to mills, run by tide or located at the first powers above their mouths. As the best class of timber failed in the first locations men pursued it farther up the streams, or spread along the coast to other regions which had not yet been drawn upon. For a long period, however, they cut only pine, even after they had to go long distances for it. In fact, the State had been settled nearly two hundred years, and the larger rivers had been culled for pine clear to their sources on the plateau, before there was a profitable market for other soft-wood timber. At length, however, the limits of the pine supply, a supply never so abundant per unit of area in the northern wilds as in the low-lying parts of the State, began to be approached, and spruce began to take the place of pine as the staple of lumber export.

Since about 1840, then, the bulk of the lumber exported from Maine has been spruce, which was cut in the great forests of the plateau and sawed at mills located low down on the Penobscot, Kennebec and Androscoggin Rivers. Since the early 70's, however, the saw-mills have had a competitor in the log markets of the State in the shape of mills manufacturing wood paper. Beginning about 1870 in a small way, pulp and paper manufacture rapidly increased, and in ten years had become well established. After a period of experimentation spruce-wood was settled upon as by far the best technically for most uses, and it is now exclusively used in most mills. The amount of this use can be judged of from the mill capacity. In 1894 the pulp and paper mills of Maine numbered forty, and represented, as reported to the State Labor Commissioner, an invested capital of \$12,000,000. They employed between four thousand and five thousand men, and had a daily capacity of 397 tons of paper and 765 tons of pulp. At the beginning of 1899 the mills of Maine reported to the directory of the trade a daily capacity (not production) of 650 tons of paper and more than 1,000 tons of pulp. In this respect Maine stands second only to New York among the States of the Union.

Here we get at what is at once the big and the pressing matter in connection with the forests of Maine. Paper-making is one of the great, stable and growing industries of the country. It is mainly dependent on spruce-wood because spruce excels in length and strength of fiber, and is most readily reduced to the macerated condition. Now the woods of Maine possess the largest stock of spruce-wood existing within the limits of the United States, while probably in a still greater degree they embody growing capacity. The question what that resource amounts to, the question, too, how it is being used and what may be done to foster it, are questions of concern to the whole country.

The people of Maine have been behind in the appreciation of their natural resources. The State is approximately 31,500 square miles in area. Wells, in 1869, estimated, excluding water and cultivated land, that two-thirds of it, or 21,000 square miles, was covered with

woods, and the conditions since then have not greatly changed. The area destined to be permanent forests, as earlier defined, we may set at about half the area of the State, or 15,000 square miles. Probably more than that, even taking out waste areas in the shape of burned land and barrens, now possesses spruce of at least some small value. As to amounts of timber standing, no careful summaries have ever been made, except for some comparatively small portions. Much of the country never has had the timber upon it estimated, and if that had been done a vast amount of digestion and re-exploration would be required before the figures could be safely compared and summarized. The best that can be done here to give an idea of the condition of the Maine woods is to describe very generally and cursorily different tracts of country.

Some twelve thousand square miles on the St. John and upper Penobscot are timber-land of very varying quality, containing every variety of stand natural to the region. Considerable areas in the aggregate have never been cut for spruce, and the cutting that has been done has generally been for saw-logs of good quality merely, and pretty loose and unsystematic. The area named has not been seriously damaged by fire. Here, due to its area rather than quality, is the great supply of spruce-wood now existing in the State.

The Kennebec River drains 5,800 square miles, but less than half this area could be classed now as actually spruce producing. But at the heads of the streams, in very difficult situations, small tracts yet remain that never have been cut for spruce; but the remainder has been cut through, much of it severely and several times over, while both in early and more recent years the region has suffered severely from fire.

The Androscoggin River possesses about the Rangeley Lakes the best spruce timber-land in the State. It has been saved from fires, and, due to the roughness of the land, much of it has thus far escaped cutting. The drainage is of small area, however, 2,750 square miles in Maine, and half of that, in the lowlands of Southwestern Maine, cannot be considered as spruce-producing. There is also a great mill-capacity located in this region. At Berlin, Livermore and Rumford are some of the largest paper-mills in the world, and while they draw a considerable portion of their wood-supply from Canada and elsewhere by rail, the Androscoggin drainage itself is being called upon for timber at a rate and in a manner that will within a few decades, if continued, blot it out as a source of spruce-timber.

Other items of the timber-supply of Maine are of minor importance, at least in the present connection. Southwestern Maine has white-pine as its main soft-wood growth. This is a quick-growing wood, and on that part of Maine does a considerable lumber business. This item is seldom thought of in connection with the lumber-supply of the State, but, as a matter-of-fact, wooded lands in this region are probably producing more per acre than the backwoods. Pine, however, is seldom used in the manufacture of paper.

Most of Washington and Hancock Counties, in the southeast, consist of poor and rocky land, fit for nothing else but the growth of timber. This country, however, has been long and hard cut. A good half of its area, too, has been burned over, and while burned land almost always quickly grows up again, fire changes the character of the growth and sets it back as a producer of lumber. As to spruce-supply, as available now and in the next fifty years, the main items have been considered already.

Under the circumstances it is perhaps rash to set any figures for the timber-resources of Maine. In stating clearly, however, that such a figure can be merely a rough guess, consequences of presumption are deprecated. It seems probable, then, that 25,000,000,000 feet, board measure, may approximate the amount of spruce-wood standing in the State. The total lumber cut in the State in 1896 was something over six hundred millions. Of this probably five hundred millions was spruce. About two-fifths of this went to the paper and pulp mills.

Six hundred millions is equivalent to 30 feet per acre on the gross area of the State. Five hundred millions may be 50 feet per acre on the area of what we might call spruce-producing land. These figures are within the amounts which such studies as have been made attach to ordinary cut-over land as its yearly growth. Certainly, they are small in comparison with what we know scientific forestry has produced elsewhere.

The general inference to be drawn from these facts is not a discouraging one. Our resources are still great, and we may feel justified in using them freely. It is to be remarked, however, that paper-mill capacity in the State is being rapidly increased at the present time, and promises to reach in the near future a much greater development.

It might be remarked of the foregoing that it is business and not forestry. The reply to that is, that whatever forestry we are to get in Maine, at least in the near future, must be worked out under business conditions. The State of Maine is not likely to interfere by law with the conduct of private business. Neither does it appear that State ownership of wild lands to any great extent is likely to be brought about. Maine is poor in comparison with the States that have inaugurated that policy, while it is not called to that course by such urgency. Agriculture has not, to our knowledge, been affected by the cutting of our forests. The flow of our rivers has not been affected to such an extent as to elicit protest or a call for investigation. The climate of Maine is such that almost all denuded or burned areas very quickly reclothe themselves with growth which,

¹ The amount of actual forest land is here meant, not the gross area.

if not valuable at once for timber, at least protects the surface of the ground beneath it.

The man therefore who would throw in his lot with the forests, who would economize in their use and maintain their growing power, must bring himself to bear on the forces in the field. He should not be choice in his weapons. The spread of information will accomplish much, but competition, when it can be brought to bear, may prove a more effective tool. Forestry should seek to ally itself with business, to promote the success of careful and foresighted concerns. The forester, if he would work directly on the problem of management, must work in private employ and in accordance with its fundamental conditions. First among these is the necessity of making profit. Should the forestry practised lead to loss, the business goes down and the forester's position and opportunity go with it.

The lay of the land in this quarter will become more evident if we briefly review the systems of landholding and management existing within the State. First is the stumpage-selling system, long current and now in vogue in the timber-lands of central and northern Maine. The land title in this case is held by men who neither own mills nor cut logs. Neither, as a rule, are they practical woodsmen. They are simply men of means who have acquired lands by inheritance, or who, having found out that timber-land is a safe and profitable investment, have bought it on the judgment of others. They sell lumber standing at so much a thousand, and do not, as a rule, exercise, either directly or through their representatives, any effective supervision as to how it is cut. The man who buys the stumpage may or may not own mills. At any rate, he is interested in getting as good a lot of logs as possible for the stumpage paid and with the least outlay of time and money. He cuts accessible bunches, therefore, and leaves distant or scattering timber. He cuts his stumps as high as is convenient, and throws away a quarter of his lumber in the shape of the knotty tops, which, though capable of use, are of distinctly less value. He slashes through the country anywhere with his roads, and makes no attempt to spare young growth or to save such as is killed if it comes below the class of most desirable timber. In examining these matters a few years ago for the United States Forestry Division, I found concerns where only 60 per cent of the whole volume of trunk-wood was saved from the largest and finest trees, and where, taking into consideration the small trees killed and left, the lumbermen put into the water less than half of the timber killed.

Such methods as these are an heirloom from former times, but they are rendered possible in the present only by the system of landholding under consideration. The trouble is the interests of the man who does the work are divorced from those of the land on which he is operating, and that this is not offset by strict contract and supervision. The power of remedy lies with the land-owners, who are strong parties, and who would benefit by careful handling of their lands. In a few cases this has been done. Thus the only really conservative force on the Androscoggin to-day is a large body of land held in this way which is operated carefully and with a view to the future. As a rule, however, nothing can be expected from present owners. The only remedy is to buy them out.

Again, land-ownership in the past has often been a subsidiary part of the saw-mill business. Men engaged in lumber-manufacture found that they could buy land cheaper than logs, and did so, going on often to do their own lumbering. In their cases logging-work is frequently somewhat more economical, but it can hardly be said to be more foresighted. The man's object here is to stock his mill. Beyond that the land has no value.

An example here, an extreme one, to be sure, will serve to show what is sometimes lost under the present methods of conduct of the lumber business. I happen to know where a very large amount of spruce timber, belonging to one concern and standing in one compact body, was killed by the ravages of insects. Within two years from the death of the trees there must have been a loss on the lumber not far from fifty per cent. After five years or so there would be nothing there worth going after. And yet, due to stupidity, obstinacy or to financial pressure, no adequate measures were taken to save it. In fact, the dead timber was left to rot, while nicely-growing land that had once been cut through was stripped off beside it because logs could be got there a little cheaper. What good forest management consists of in such a case is very evident. The fact illustrates the principle that good forestry is very often identical with sound business. Neither one is possible if there is too great financial pressure.

Whatever the economy of his work, from the point-of-view of forestry, there is one fundamental trouble with the saw-mill man's attitude to his land. He regards it simply as a source of stock for his mill. He buys the land to strip it. He wants to get his money out quickly and put it into some other investment. So he takes principal as well as interest, the stock of wood needed for growth and reproduction, and not merely the mature crop. If, in years back, owing to slack methods and the condition of the market, a good deal of growing lumber has been left standing, that is entirely aside from his main purpose and intention. At present some of our most destructive and thoroughgoing cutting is being done by saw-mill men.

Since the pulp and paper mills began to be a strong factor in the log market of the State a good deal of hue and cry has been raised, because they cut or caused to be cut much of the small growing lumber. Small logs could be used by them to quite as good advantage

as large ones, while, since they were less desirable to the saw-mills, they could be had much cheaper. There have been, therefore, of late years two classes of logs on our larger rivers, saw-logs and pulp, selling at considerably different figures.

The pulp-mills have been justly criticised on this head, and yet there are considerations here that should weigh strongly in their favor. They have worked great economy in the use of our forest resources, have taken vastly more from our lands than would have been possible under the old régime. The pulp-mill can use the knotty tops; a seamy or crooked tree is as good as a perfect one; the small trees cut or smashed down, which in other times were left to rot, can all be utilized by the pulp-mill. Sometimes tracts of land are given a value, and can be operated at a profit for pulp, which would never have been cut for saw timber.

And if, in the direction of economy, the paper-mill has vastly raised the standard, it has seemed to promise the same in the direction of foresight. In beating about among the lumber-consumers of the State, as just mentioned, the fact forced itself upon my notice that the men who were thinking pointedly about the matter of timber-supply, the men who were most interested in anything that promised to increase and extend the yield from our forests, were the owners of pulp and paper mills. And, on consideration, the reason for this is plain. It is their great investment in mill-plant, an investment dependent on forest-supplies for life and profit. The contrast with the saw-mill business is striking, and, in the present connection, vital. A plant that will convert 7,000,000 of spruce-wood a year through the stages of ground-wood and chemical-fiber into finished paper requires a capital, mostly in the fixed form, of not far from a million dollars. Many of our operating saw-mills, on the other hand, represent a valuation of only \$10,000 to \$20,000. The paper-mill man is tied; he is in the business for a long period. The saw-mill, when lumber gets scarce or business poor, may be abandoned.

Thus, we have had a movement among the paper-mills, yet in its infancy, but apparently increasing, to back themselves with land enough to render them independent. With that movement has gone the purpose to treat those lands carefully and with foresight.

In this movement it seemed as if the financial basis might have been attained for conservative forest management, as if we had solved the problem of so disposing of the ownership of our forests that their value might be preserved and the community at large derive most benefit from them. Still more was that hope nourished last year when, at the organization of the International Paper Company, with control of 80 per cent of the output of newspaper of the country, a professional forester was employed, and the intention expressed of living, so far as forest-supplies were concerned, within the limits of actual growth. It looked as if the paper-mill, backed by forest-land, the two operated together as one great permanent investment, was the form in which the bulk of our Maine woods might in time be held. This appeared the more likely because, as many of the mills have been situated, land sufficient to so stock and fortify them could be had for a less investment than the cost of the mills, so that heavy profit from the land part would be a minor matter in comparison with the safety and prosperity of the whole.

We may hope for much from this idea, and yet must be cautious in banking too heavily upon it. It seems sometimes as if American business enterprise were too grasping, reckless and shortsighted to have safely entrusted to it a great natural resource. Heedless desire for immediate gain tends to the overstocking of every profitable line, and ruinous prices and cut-throat competition follow in its wake. Thus men reckoning at the very closest on the price of paper are compelled to figure on the price of pulp-wood as one element, and if that is done too closely it shuts out the opportunity to do anything for the land. On the other hand, the danger in combination is that business will be conducted with reference to the stock-market rather than to sound business success. Either excessive competition or wrongly-used combination is destructive of sound, liberal business. Either, in this case, will prevent doing anything to the advantage of the land.

At any rate, as a safe and satisfactory arrangement for the holding and operation of forest land, we have suggested to us the organization of companies of general investors. Forests, carefully handled, form a very secure form of investment, able to pay a moderate return without loss of capital. In Europe forests have proved the safest and surest investment, being used in that way not only by the noble families and others of the best class of investors, but being held for revenue by cities, towns and states. On the other hand, conditions are right here to keep the forest constantly producing. The investor looks only for interest, and wants his capital kept intact. By that means sufficient wood-stock for growth and reproduction is left on the land.

[To be continued.]

THE NEW FRONT OF MILAN CATHEDRAL. — A few weeks ago work was begun in Milan on the renovation of the façade of the cathedral, the completion of which will cost over \$4,000,000. The builders will follow the plans made fifteen years ago by Giuseppe Brentano, who won the prize over 120 competitors, and who died shortly after his triumph. The plan was then deferred to allow the funds to grow. An attempt will be made to remove some of the inconsistencies of style due to the fact that it took four centuries to complete the cathedral. — *N. Y. Evening Post.*

BOOKS & PAPERS

WE wonder whether English architects are as properly grateful to things American for their reputation as creators of delightful homes as they unquestionably should be. The particular American product that should command their grateful respect is the great Gulf Stream, without whose moist and balmy breath there would be fewer vines, mosses and lichens to soften the crudeness of and add grace to many an English home, both ancient and modern, which, under existing circumstances, is accepted by the student as all that is satisfactory and charming in domestic architecture. Tear away the vines, plough up the lawns, fell all the trees and replace them with freshly transplanted saplings, and how much more pleasure would one find in a half-timber house in Cheshire than in a stucco-covered villa just outside of Berlin? Even in the case of England's particular glories, her cathedrals, does not very much of their interest and value really lie in their settings, their landscape surroundings, their lawns, their closes, their garths, their trees, vines and shrubs, and is it not true that an English architect's claim to be considered an artist can rightfully rest more on his abilities to appreciate and take advantage of the landscape opportunities than upon his ability to compose an artistic design?

In city work, the Englishman seems to be obsessed by a spirit of triviality and love for littleness that, while presumptively seeking for grace, avoids all breadth. In the country, however, the Englishman is more at home and at his ease, and can more nearly express what he feels; but, even then, if shrubs and vines should be torn away there is many a building, which now has a character, would lose it at once, and appear as void of decency and propriety as the veriest drab upon the street.

As America is of service in warming the contents of England's watering pot, it is only fair that England should reciprocate and show the kind of things that flourish because of this benign gift of needed warmth and moisture, and reciprocity is maintained through the providing the architects of this country with photographic views of some of the charming results which English architects, aided by climatic influences, have accomplished. But as English photographs are exceptionally and unnecessarily expensive, it is a matter of gratulation that those who are interested in the Englishmen's country-house can gratify their taste at less cost by procuring this series¹ of plates copied from such photographs, and though no copy of a photograph is as good as the original, still, this series is sufficiently good to buy and well worth the modest price its publishers place upon it.

There are probably few architects, and almost certainly no owners, who have indulged, in this country, in building half-timber houses with panels filled with rough-cast, who, on completion of the building, have not been distressed by its harsh contrasts, so different from the mellow effects one felt sure of having seen on every side in England. It happens that amongst these plates are shown several views of half-timbered houses which evidently have but lately been repaired, and, of course, the vines and shrubs have been torn away during the process. The fact that these plates exhibit the same unpleasantly harsh contrasts suggests how great is the debt that English domestic architecture owes to the modest and clinging vine. We can in this country, if we choose, erect copies of any of the charming residences shown on these plates, but the result will never look like the original. Even the most generous use of the hose will never make an American lawn in August look like an English one, nor an American woodbine like an English ivy, and until they do, it is hopeless to expect that American country-houses, however convenient and delightful they may be, can exhale the same kind of charm that meets one over yonder, no matter what English country he may be travelling through.

ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

PORCH OF THE ST. PAUL BUILDING, BROADWAY, NEW YORK, N. Y.
MR. GEORGE B. POST, ARCHITECT; MR. KARL BITTER, SCULPTOR,
NEW YORK, N. Y.

[Gelatin Print issued with the International and Imperial Editions only.]

A SCULPTOR'S STUDIO ON THE PALISADES, FOR MR. KARL BITTER,
WEHAWKEN, N. J. MR. FRANK E. WALLIS, ARCHITECT, NEW
YORK, N. Y.

PLAN AND FRONT VIEW OF THE SAME.

¹ "English Country Houses": One hundred plates, small quarto. Boston: Bates & Guild Company. 1898. Price, \$10.00.

ST. STEPHEN'S P. E. CHURCH, SEWICKLEY, PA. MESSRS. BART-
BERGER & EAST, ARCHITECTS, PITTSBURGH, PA.

SCREEN IN THE CHURCH OF ST. MERRI, PARIS, FRANCE. DRAWN
BY MR. W. T. PARTRIDGE, ARCHITECT, NEW YORK, N. Y.

[The following named illustration may be found by refer-
ence to our advertising pages.]

HALL OF HISTORY: WASHINGTON UNIVERSITY, WASHINGTON,
D. C. MESSRS. BRITTE & BACON, ARCHITECTS.

This plate is copied from *Architektonische Rundschau*.

[Additional Illustrations in the International Edition.]

CHAPEL OF THE SAILORS' SNUG HARBOR, STATEN ISLAND, N. Y.
MR. R. W. GIBSON, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print.]

DOME OF THE SAME CHAPEL.

[Gelatin Print.]

THE SURVEYOR'S INSTITUTION, WESTMINSTER, LONDON, ENG.
MR. ALFRED WATERHOUSE, ARCHITECT.

RETRO-CHOIR, ALTAR AND SEDILIA, BRISTOL CATHEDRAL, ENG-
LAND.

NOTE: The double-page plate illustrating the statue of General Arthur which, because of a mis-shipment, was omitted from last week's issue, will be found in to-day's issue, but dated as belonging to the previous one. Librarians and other subscribers will please insert it in its intended place when binding.

COMMUNICATIONS

[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

A CORRECTION.

38 LEWIS ST., LYNN, MASS., October 2, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I see that the honor of receiving second prize in the Rotch Scholarship Competition has been erroneously credited to me in the *American Architect* for last week, for my drawings were placed third by the jury. The competition was close between all three competitors.

WM. L. WELTON.

[We hope to atone for the unintentional injustice we have done to Mr. W. L. Mowl, the real winner of the second prize, by publishing his design for the scholarship in question, which will at the same time stand in some sort as representing the work of graduates from the Department of Architecture at Harvard.—EDS. AMERICAN ARCHITECT.]

A TRIUMPHAL-ARCH AND ROSTRUM.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES, October 4, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The magnificent "Dewey arch" in New York was the joint work of an architect and twenty different sculptors, all of the highest class, and working with an inspiring enthusiasm. The grand result was one of the finest triumphal memorial edifices in the world. Now, if some artistic architect would design an amendment to it, it might be made the noblest thing of the kind in existence.

A reviewing-stand, or rostrum, at the base would add greatly to its dignity and usefulness for processions and public functions. Give the hint to architects and artists in your influential journal, and, perhaps, a competition would produce something finer than has ever been produced. Yours very truly,

WM. H. INGERSOLL.

NOTES & CLIPPINGS

A CASE OF EQUESTRIAN SEPULTURE.—At a depth of 27 feet a curious discovery was made recently, a Berlin paper says, on the island of Gothland—the skeletons of several knights in full armor seated on their horses. Archaeologists think they date back to the ninth century.—*Exchange*.

A COMMERCIAL CURIOSITY.—There was a time when shipbuilders in this country could sit in their offices and harden their hearts against the pleading of clients who wished ships to be built. That, however, was long years ago, but we scarcely realized that business had deteriorated so badly as would appear from a note which originates from a Government Railway Department, who are willing to bestow patronage on shipbuilders on somewhat novel terms. They wish the hull of a 60-foot tugboat built, and a specification has been prepared and copies have recently been distributed broadcast, with the request that each recipient should send "immediately" to this State Railway Department a "postal money-order for the sum of 10s for this specification, which money will not be returned in any case." The italics are not ours; but are evidently intended to make assurance doubly sure. The specification, we hasten to add, is voluminous, more so even than that for a big battleship, and it so excels in the peculiarities of its conditions, that we are surprised that at least 100% were not charged instead of 10s. The larger sum would have been paid as readily as the 10s. "Tenders sent by firms not having paid the price of specification will not be considered." That, of course, goes without saying, for it is more important to get the half-sovereigns than a good boat. If a moderate percentage of the recipients of specifications send the money it will greatly help towards the payment for the boat. We hope for the future of the maritime greatness of England that shipbuilders will send tenders, for "the firms who receive our specification and abstain twice from tendering without justifying such act will be struck out from our list of tenderers." Truly it is an age of international "boycott;" but how can a firm that does not tender be on a list of tenderers? Then, again, to revert to this 10s., "it is understood that all firms tendering or not must pay the price of the specification, unless they signify on receipt that they do not wish to take part in any future specifications." To refuse to tender would be like selling one's birthright for a mess of pottage. We hope everybody will pay their 10s. to this State Railway Department; indeed, if it were not a State in which Britain has some administrative power, we might fear war if the offer were treated with disrespect. — *Engineering*.

FIGHTING THE CHICAGO DRAINAGE-CANAL.—The instant Gov. John R. Tanner signs the permit which will authorize the Chicago sanitary trustees to open the Chicago sanitary canal, the City of St. Louis will apply for a federal writ of injunction to prevent the opening of the canal. All the local ammunition for an attack through the federal courts on Chicago's drainage and deep-waterway scheme is ready. City Counsellor Schumacher has in hand an immense amount of material to back up his application for the injunction. Dr. Max C. Starkloff, St. Louis's Health Commissioner, has been making a series of bacteriological examinations of the waters of the Missouri, Mississippi, and Illinois Rivers, and now is arranging the results for court purposes. He also has gathered a large amount of scientific and other data on the pollution of streams and rivers and the effects of sewage on drinking-waters. Congressman Bartholdt is prepared to demand the appointment of a congressional commission to investigate the subject of pollution of navigable rivers as soon as the national House is called to order. The Bartholdt bill will certainly contain a clause prohibiting the opening of the sanitary canal under the permit granted by the War Department until the commission has made its report. It is held that General Alger, when Secretary of War, exceeded his authority when he gave the Chicago sanitary trustees permission to take water from Lake Michigan and send it down the Illinois Valley. St. Louis officials claim they have carefully investigated the federal statutes and find that General Alger stretched a law which authorizes the War Department to grant permission to builders of slips and basins to take water from navigable lakes and rivers. They say General Alger had ample authority to permit the filling of the sanitary canal with Lake Michigan water, for the excavation as far as Lockport is practically an extension of the Chicago harbor—a slip twenty-eight miles long—but they maintain Congress alone has the right to permit the opening of the gates of the controlling works at Lockport, so that there may be an outflow of Lake Michigan through the canal to the Des Plaines and Illinois Rivers. — *St. Louis Correspondence Chicago Record, September 23.*

TELEGRAPHY AMONG THE ANCIENTS.—Three or four centuries before our era, Eneus invented several systems of signalling. In particular, he devised the first synchronic apparatus. At each station was installed a great vessel of uniform capacity, having in its side a hole of the same size for each vessel. At the surface of the liquid contained in the vessel was a float in which was fixed an upright rod divided into equal parts, each of which corresponded to one of the phrases to be telegraphed. The attendant at each station had a torch. When the first raised his torch he uncorked the hole in his vessel, allowing the water to escape and the float to sink; the attendant at the second station did the same, and this was repeated from station to station. When the division of the rod corresponding to the message to be sent had fallen to the level of the edge of the vessel, the first attendant lowered his torch, and replaced the cork; the others, imitating his action, could then read off on their rods the particular message sent by the first. . . . In all such methods as these the messages were limited to words or phrases agreed upon beforehand. In the second century B. C., Cleomenes invented a method of doing away with this inconvenience by combining luminous signals so as to form a code. Each station was furnished with several huge fire-vessels corresponding each to a group of letters of the alphabet. The one that was exposed so that it could be seen from the next station, while the others were hidden, indicated the group including the letter to be transmitted, which letter was then shown more closely by lanterns. Polybius improved this by dividing the alphabet into five groups, four of five letters and one of four. These were telegraphed by torches moved in given directions. For instance, three torches at the left of the station meant the third group, then two at the right meant the second letter of this group. — *N. Y. Tribune*.

THE DEWEY ARCH.—The Dewey Triumphal Arch, in Madison Square, was modelled after the arch of Titus and Vespasian, in Rome. The sculptures are the work of the following artists:—

Top of arch—"Quadriga and Victory," J. Q. A. Ward.
Group on front of pier—"Call to Arms," Philip Martiny; "The Combat," Karl Bitter; "Return of the Victors," Charles H. Niehaus; "Peace," Daniel C. French.

Full length of attic—"Commodore Paul Jones," E. C. Potter; "Commodore Hull," H. K. Bush-Brown; "Commodore Perry," J. Scott Hartley; "Commodore Decatur," George L. Brewster; "Commodore McDonough," Thomas S. Clarke; "Admiral Farragut," W. Ordway Partridge; "Admiral Porter," J. J. Boyle; "Lieutenant Cushing," H. Augustus Lukeman.

Medallion head on spandrels inside and outside of arch—"Commodore John Barry," F. W. Kaldenberg; "Admiral Davis," F. W. Kaldenberg; "Admiral Dahlgren," Caspar Buberl; "Captain Lawrence," Henry Baerer; "Commodore Bainbridge," Ralph B. Goddard; "Commodore Preble," Carl F. Hamann; "Admiral Foote," Frederick Moynihan; "Admiral Worden," Frederick Moynihan.

Symbolical figure north spandrel—"The Atlantic and Pacific," R. Hinton Perry.

Symbolical figure, south spandrel—"The North and East Rivers," Isidor Konti.

Over keystones of arch—"American Eagles," Philip Martiny.

Relief on side of arch—"Progress of Civilization," Johannes Gellert; "Protection to Our Country," William Couper.

Decoration of the colonnades—"Victory," Herbert Adams.

Statuary group—"The Army," Frederick W. Ruckstuhl; "The Navy," George E. Bissell. — *N. Y. Evening Post*.

TO CURE FROST ON SHOW-WINDOWS.—During the last winter I made a number of experiments in removing ice or congelation of water from window-panes, using fourteen methods. I found them efficacious in every instance, but some far superior to others. That which worked best No. 1, that second best No. 2, and so on. I noted that in shops where there are so-called "box windows," the congelation was most apparent, and that in some where there was a comparatively dry heat, the windows were not materially affected. I place the efficacy of the remedies in the following order: (1) flame of an alcohol lamp; (2) sulphuric acid; (3) aqua ammonia; (4) glycerine; (5) aqua regia; (6) hydrochloric acid; (7) benzene; (8) hydriodic acid; (9) boric acid; (10) alcohol; (11) nitric acid; (12) cobalt nitrate; (13) infusion of nut-galls; (14) tincture of ferrous sulphate. I found, adds the correspondent, that by the use of an alcohol lamp (which, of course, has to be handled with great care) the results were immediate, and the effect more nearly permanent than by any other of the experiments. The sulphuric acid application was made with a cotton-cloth swab, care being taken not to allow any dripping, and so with all other acids. The effect of the aqua ammonia was almost instantaneous, but the window was frosted again in a short time. With the glycerine there were very good results—but slight stains on the window which were subsequently easily removed. I have had inquiries from retail opticians, who have complained about their windows being unserviceable in very cold weather, and desiring a remedy. I thought the results of my experiments would reach widest publicity through your columns, and consequently give the facts to you. — *H. C. Demming in the London Optician*.

VENTILATION OF THEATRES.—The fourth and last sitting of the Sanitary Congress was held yesterday at Southampton. Considerable interest was manifested in a paper by Dr. Thomas Glover Lyon on "Ventilation for Crowded Buildings and Consumption Hospitals, with Special Reference to the New Method of Distribution and Removal of Air." He stated that his object was to lay before the Congress methods of supplying air to rooms where there was such an aggregation of people as to render some method of forced ventilation necessary in such places as concert-rooms, public theatres, churches, dining-rooms, saloons of ships and railway-cars. It was usually considered that each person at a theatre should be supplied with at least 1,000 feet of air an hour. At the Opera-house at Vienna the figure was 1,600. The necessity of mechanical ventilation in the case of crowded rooms and the importance of natural ventilation were shown by Dr. Barwise at the Congress last year, and he also demonstrated how the additional expense entailed in supplying the extra purity of air was amply repaid by additional output in the case of workshops, and extra grant in the case of schools. The gain by introducing good ventilation in offices where clerks were crowded together would doubtless be even more marked. While agreeing with Dr. Barwise and most authorities on the superiority of the plenum over the vacuum system, he would insist on the great value of using both systems together—that was, of blowing in air at inlets, and exhausting it from outlets. Not only by this means was the air in rooms kept at nearly atmospheric pressure, but the necessity of making the building or rooms air-tight was dispensed with. — *London Telegraph*.

A CLOSE ESTIMATE.—Speaking about close estimates, Gen. John M. Wilson, Chief of Engineers, made one some time ago. Congress called upon him to estimate the cost of an addition to the Government Printing-Office. As it was near the close of the session, and Congress was hurriedly getting through its work, little time was given General Wilson to consider the matter, but he submitted his estimate, and the appropriation was made accordingly. He estimated that the proposed building, according to the plans and specifications which had been drawn, would cost \$121,121.90. The building was completed, and there was \$9.16 surplus covered back into the Treasury. General Wilson was put in charge of this work, and he took a great deal of interest in it. He always gave credit, however, to Lieutenant Sewell, of the Engineer Corps, who had the immediate supervision of the work, for the care with which the building was erected, and the fact that the cost did not overrun the estimate and appropriation. — *Exchange*.

Entered at the Post-Office at Boston as second-class matter.

OCTOBER 14, 1899.



SUMMARY:—

A Builder sensibly protests against Defects in Plans given him to follow.—Proposed Perpetuation of the Dewey Arch.—Union Square as a suitable Site for it.—The T-Square Club Exhibition.—The Peripatetic Exhibition and the Exhibition Catalogue.—The New York Underwriters and Salt-water for Fire-engines.—The Use of Oil on California Roads.—Proposed Decorations for the Dewey Reception in Boston. 9

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New Baptist Church and School, Acton Bridge, Eng.

Additional: A Competitive Design for the Mount Sinai Hospital, New York, N. Y.: Mr. Bruce Price, Architect.—The Manhattan Hotel, 42d St. and Madison Ave., New York, N. Y.—The Main Staircase-hall in the Same.—The Royal Hotel, Norwich, Eng.—Nos. 74-78 High St., Deptford, Eng.—Residence at Wimbledon, Eng. 15

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WE are glad to hear of a contractor who is conscientious enough, as well as prudent enough, to call attention to what he thinks to be defects in the plans from which he works. The builder of a new school-house for the city of Hoboken, New Jersey, has formally notified the Board of Education that if he is compelled to finish the work in accordance with the plans and specifications, the Board must assume the responsibility for any accident which may occur, saying that, in his opinion, "the walls will not hold or sustain the floor-beams, especially when completed and filled with children, and may collapse at any moment." Of course, it is understood that we express no opinion in regard to the merits of the case, knowing nothing of the facts, and the architects of the building are reported to have said that, if there is any danger of the collapse of the walls, it is due to the neglect of the contractor to comply with the requirements of the plans and specifications in regard to anchors and other details; but, whether the contractor is mistaken in his views or not, and whatever may be the cause of the weakness which he thinks that he perceives, it is unquestionably better to give the alarm now than to wait until the lives of hundreds of children may be endangered. In fact, it would have been better still if he had given it before, as the third floor is already on the building, and it is not easy to strengthen walls after this point is reached. It is to be presumed that the contract plans and specifications showed the construction as it is now being carried out, and the builder would have done well to express his opinion of them before agreeing to carry them out. In fact, as contractors may be interested to know, the law says that a builder who contracts to erect a building in accordance with certain plans and specifications becomes responsible for the safety of the structure. He cannot protect himself by saying that he did not understand the drawings, the theory of courts being that a man who agrees to carry out certain plans and specifications is presumed to understand them, and cannot throw the consequences of his ignorance or mistakes on other people. Even the architect cannot be saddled with the results of the contractor's misunderstanding of the plans, or of errors in them which the contractor, with reasonable attention and skill, could have detected in time to have them remedied; the law assuming that the contractor and the architect are both experts in reading plans as well as in executing them, and that both are bound to use all their skill and knowledge to carry out the work entrusted to them safely and well.

IT is quite probable that the Dewey Arch in New York may be made permanent, by replacing it with one in marble, as was done with the Washington Arch, at the southern end of Fifth Avenue, some years ago. A subscription of fifty thousand dollars toward the cost has been promised, and it seems probable that all the money necessary will be raised without difficulty. The situation of the Dewey Arch is much less favorable for such a monument than that of the Washington Arch, but it is possible that this might be changed. Meanwhile, the designer of the arch, Mr. Charles R. Lamb, while pleased, naturally, at the public approval of his work, is modest enough to say that it is only a sketch, and that plenty of time should be allowed for studying the design before it is executed in marble; and the sculptors concerned have, no doubt, the same feeling.

MR. J. Q. A. WARD, the President of the National Sculpture Society, and the sculptor of the "Victory" group on the Dewey Arch in New York, has, we are glad to see, some ideas about the proper location of the permanent arch which ought to be heeded. To place a marble triumphal arch across a crowded street, nearly in front of a cluster of large hotels, with nothing but an open square to balance the composition on the other side, would be artistically most unfortunate, and, as a matter of convenience, the arch would be so much in the way there that we should expect to see it demolished within twenty years to make room for the traffic of the street. Mr. Ward suggests the middle of Union Square as a suitable site, observing that, in such a position, traffic might either pass through it or around it, as is the case with the Arc de l'Etoile in Paris. This is an excellent suggestion in every way. If it were not for retaining the attendant columns, which, in our opinion, add nothing to the effect of the arch, and might well be dispensed with, we should like to see Mr. Ward's plan slightly amended by setting the arch at the south end of the enclosure of Union Square, instead of putting it in the middle. Placed at the south, facing down Broadway, it would be much more imposing than in the midst of the shrubbery of the Park, and, situated in this way, in the middle of the busiest portion of the greatest street in the world, where the traffic must pass under its shadow, all the details of its sculpture would become impressed on the minds of millions of people, while it would be no more of an obstruction there than in the centre of the Square, and infinitely less so than it would be in Fifth Avenue. Another advantage in placing the arch at this point in Union Square is that it would form an admirable central motive for a group of monuments, extending on each side on the south border of the Union Square enclosure, to the limits of the present fence. A double colonnade arranged in this way, with the arch in the middle, and terminating at each end in a decorative mass, would give room for scores of statues, at the same time that it would form an incident, so to speak, of unrivalled magnificence in the course of Broadway. Even the Arc de l'Etoile, dwarfed, as it is, by the enormous expanse of pavement in the middle of which it stands, hardly commands the attention that would be called to a composition which entirely closed the vista of Broadway, as this would. To the suggestion that our triumphal arch ought to serve as a passageway for processions it may be replied that in this situation it would be far more useful than in the middle of the enclosure, or in Fifth Avenue. Any body of men, not too numerous, could form very advantageously, and at its leisure, in the Square, issuing southward through the arch to begin its progress through the city; while, with the arch in almost any other situation, the procession must be formed elsewhere, and the march under the monument would have no special significance.

THE Annual Exhibition of the Philadelphia T-Square Club will be held at the Art Club Galleries from December 16 to January 6. Architectural drawings in any rendering, photographs, and drawings, models and executed examples of work in the allied arts, will be received. Exhibits will be collected and returned, free of expense to exhibitors, in New York, Boston, Chicago, Cleveland, Pittsburgh, St. Louis, Detroit, London and Paris. The practice, which has been growing rapidly of late, of sending works directly from one exhibition

to another, is this year systematized, and some of the associations belonging to the Architectural League of America have arranged to give exhibitions at consecutive periods, forming what is called a "circuit," with the understanding that most of the exhibits sent to the T-Square Club will be forwarded, at the end of its exhibition, to New York, and thence to Chicago, and so on until they have made the round of all the exhibitions in the circuit, concluding with that at Pittsburgh, which closes June 30, 1900. The drawings will then, after eight months of wandering, be returned to their owners. Exhibitors who would like to have them back sooner may signify their wishes on their entry-slip, but it is evidently expected that a large proportion of the drawings will make the tour of the country in this way.

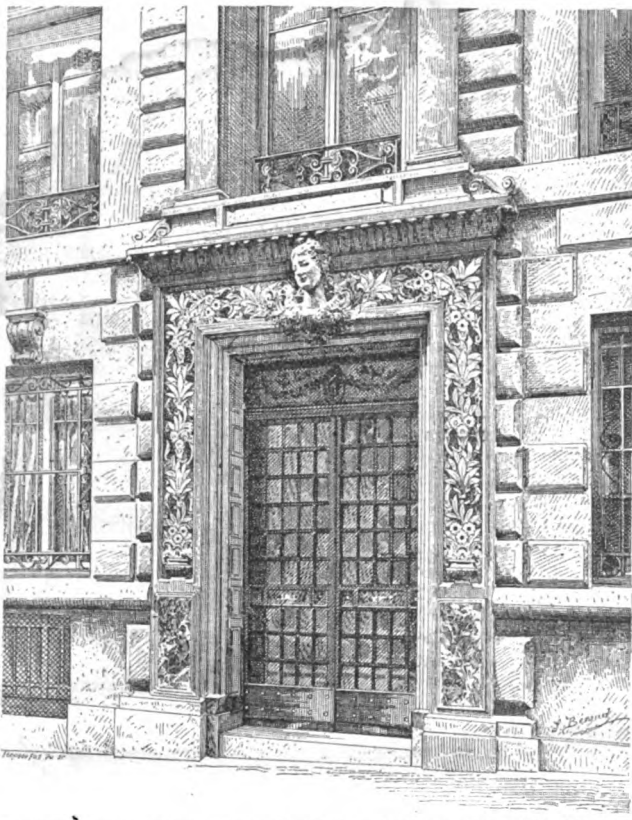
THIS plan of holding a series of exhibitions, all over the country, of the same set of architectural drawings, although it is much to be commended in the interest of draughtsmen and students of architecture, both professional and amateur, is a more important innovation than would at first appear. So far as the public is concerned, it would be hard to devise a more effective method of educating the taste of the community, and interesting all classes in the great art of architecture, and the fact that a large part of the exhibits in each place have been, or will be, shown elsewhere need not affect the local character of the display, which it is desirable to cultivate as far as possible; but it seems to us probable that the new system will lead ultimately to profound modifications of the existing methods of selecting and exhibiting architectural drawings. Obviously, the society or club which holds the first exhibition has the great advantage over all the rest of being able to show a collection of drawings entirely new to the public and the profession. No doubt this has been recognized, and it is likely that the T-Square Club, which has certainly deserved the honor of leading in the matter for this year, will be obliged, in subsequent years, to take a less conspicuous place; but a system of strict rotation among the clubs would not be altogether desirable or convenient, and there may be difficulty in adjusting the various claims. Again, the matter of the catalogue is likely to play an important part in the final adjustment of the new scheme. Many of our readers, and many more laymen, have probably wondered how far the expense of transporting drawings thousands of miles, hiring halls to show them in, and unpacking and repacking them, could be met by the entrance-fees of the lonely visitors who straggle absently through the exhibition-galleries on pay-days. The fact is that the entrance-fees form an insignificant item in the revenue of such exhibitions, almost the whole expense being defrayed by the advertisements in the catalogue. In many cases, exhibition catalogues are distributed to architects by mail all over the country, obviously with the idea of attracting advertisers by the promise of laying their announcements before the whole profession, instead of the score or two of architects who go to see the drawings; and, as this practice is growing, it seems to find favor with those who are counted upon to pay the cost. The practice of making exhibition catalogues into advertising pamphlets has its inconveniences, but, as the exhibitions could not be carried on without it, the committees having them in charge make the best of the matter; and, indeed, as the commission paid for obtaining advertising business sometimes constitutes a handsome addition to the income of the committeeman deputed to undertake this part of the work, personal interest aids professional zeal in making the catalogue as attractive as possible. With the various independent local exhibitions substantially combined, so to speak, into a single travelling show, the several catalogues hitherto printed would be, to a great extent, repetitions of one another, and, if sent out to the profession, would go to the same persons, so that, while the first catalogue of the series would be of great interest, the subsequent ones are likely to attract much less attention than they have hitherto. The committee of the T-Square Club has apparently thought of this, for it is announced that its catalogue will cost, sent by mail, sixty-five cents, which should pay for a very elaborate advertising pamphlet. It would seem that, instead of allowing the first catalogue of the series to swallow up, in a manner, all the others, it might be well to make one catalogue do for all the exhibitions of the circuit, adding supplements in each place to cover the local works; but this would involve a new set of difficulties, and it is probable that nothing but experience will show how to solve the problem satisfactorily.

THE New York Board of Fire-Underwriters deserves the thanks of the citizens of New York for its well-timed protest against a scheme to increase the water-supply available for fire-extinguishing purposes by conveying water to the city from the Ramapo River, in New Jersey, at an estimated cost of two hundred million dollars. There are indications that this gigantic project for the emptying of the treasury of New York into the pockets of politicians and contractors has been a long time in preparation. Mr. Bonner, recently the Chief Engineer of the Fire-Department, who has long advocated the introduction of a salt-water supply for fire-purposes in the mercantile district, which would cost less than a thousandth part as much as the Ramapo project, was retired about a year ago, and his place filled with some one "in sympathy" with the present system of municipal government. In addition to this, the idea was carefully disseminated that the underwriters, in view of the known inadequacy of the present water-service, favored getting a new fire-supply from the Ramapo. The protest just made public, which was signed by ninety-eight representatives of the insurance companies, sufficiently refutes this notion, and reduces the affair to a struggle between the taxpayers of the city and a powerful and greedy gang of politicians, who will not readily relinquish the prize which they thought was within their reach.

THE use of crude petroleum for keeping down dust extends every day in this country. It is well known that several important railways now have their road-beds sprinkled with oil, to the great advantage of passengers and freight conveyed over them, as the oil practically prevents all dust from rising from the ballast. For school-houses and public buildings a deodorized oil is used, the smell of crude petroleum being disagreeable, and this deodorized petroleum is found of great service. Quite recently, several towns in Southern California have employed the crude oil for treating highways, and it is reported that the results have been extremely satisfactory. On sandy roads petroleum is of little value, as it has not binding quality enough to cement the particles of sand; but on a clayey road, with a good foundation, it is found that the oil combines with the dust on the surface of the road, forming a sort of asphalt, elastic, but firm enough to resist the action of wheels. A road which had, in dry weather, a covering of dust averaging two inches thick, presented, after the application of the petroleum, "a surface as polished, clean and clear as an asphalt street." On macadam pavement the oil has an equally good effect, cementing the broken stone in place, combining with the surface-dust to produce an elastic finish, and making the whole road waterproof. In the California towns, the oil is applied to the roads in three doses. In the first treatment, sixty barrels of oil are used to the mile of road, a space eighteen feet wide being sprinkled. The oil must be applied hot, and the road itself must be warm and dry, the hottest part of a summer day being best for the application. If the conditions are favorable, the oil soaks immediately into the surface, without running into puddles. An hour or so after the first application, a roller is run over the surface. Some time later, a second treatment is applied, with twenty barrels of oil to the mile, and a third, with a similar quantity of oil, completes the saturation. After this, nothing more need be done to the road for several years. As petroleum is found very abundantly in Southern California, the cost of the treatment is moderate, averaging two hundred and fifty dollars a mile for complete saturation.

THE temporary decorations on the line of the Dewey procession in Boston have been assigned, so far as public buildings are concerned, to the care of the Boston Society of Architects, and various members of the Society have been deputed to act as advisers in regard to private decorations, one having charge of each of the principal streets. The excellent suggestion is made by the Society that the decoration will be more effective if each street shows mainly a single color, giving broad masses, Arlington Street, for example, being dressed in blue and white; Boulton Street in red; Tremont Street in green and white; Winter Street in yellow and white; Milk Street in blue; India Street in yellow, and so on, using these colors above the second-story windows, and keeping American flags or striped bunting at this level. With such trained skill as is available among the architects, the result of a little compliance with their advice should be extremely interesting.

SMALL MOTIVE-POWER SELECTION.

Doorway on the Rue Vernet, Paris: Paul Sedille, Architect. From *L'Architecture*.

PRACTICALLY all business buildings in cities require some power. A large number of these buildings are included in a class where the demands for light and power are so great that both can be more economically produced from an isolated plant than from any outside source, as has been shown by both computation and experience. There remain, however, a still larger number of buildings where the total light and power desired are not sufficient to warrant a complete isolated plant, and where the heating problem, being already cared for, is not to be considered in connection with the exhaust-steam from a possible engine. In cases of this latter class the light is usually provided for in a separate manner, and more than twenty horse-power is seldom required.

The practical problem of motive-power selection here presented is, then, to choose the most economical means of power-generation in small units. The machines available under the conditions named are commonly three: the steam-engine, the gas-engine and the electric-motor. A choice between the three methods of power-production must usually turn on their relative desirability, required space, cost of attendance and of fuel or energy consumed. In the matter of general desirability for most cases, the electric-motor ranks first, the gas-engine second, and the steam-engine with boiler third. The electric-motor, having a simple rotary motion, and no reciprocating parts, produces no vibration when properly balanced, and can be as properly placed at the top of a building as in the basement. This property is a decided advantage with many elevators, where the location of machinery over the shaft makes a material saving.

No gases, and practically no noise or heat are given off by the electric-motor, and this counts as a strong point as to unrestricted location and general desirability. Gas-engines transmit a decided tendency of vibration to their supports, radiate considerable heat, and usually produce an unpleasant odor. They are, therefore, mostly confined to basements or the first floors of buildings, and cannot be located in apartments used for business purposes. These limits to gas-engine locations often make it necessary to transmit their power from one part of a building to another by belts, which is no small objection in many cases.

The steam-engine is open to about the same objections as to vibration and heat as the gas-engine, but is nearly free from bad odors.

The vibration and heat-producing qualities are usually enough to fix the steam-engine in the basement, but in addition there are the requirements for steam which at a distance from the boiler are undesirable because of their required space, heat given off and condensation losses. The steam-boiler for the engine involves, of course, a slight risk and is often objectionable in a basement because of its heat.

In the matter of required space the electric-motor easily holds first place, not only because its over-all dimensions are much less than those of an engine of equal capacity, but from the fact that its nature permits its installation in unused spaces that are entirely impracticable for either gas or steam engines. For the same capacity the gas-engine requires a little more room than that for steam, but this slight

advantage in favor of the steam-engine is much more than offset by the requirements for boiler-space, so that the complete steam-equipment takes up much more room than either of the other two. Attendance-charges on the electric-motor are very light, being often limited during an entire day to the necessary starting and stopping. There are but three wearing-surfaces in an electric-motor, the shaft-bearings at each end and the commutator. The bearings are self-oiling, and carbon-brushes are now commonly used at the commutator, so that these points will often require no attention for days at a time. The caring for self-oiling bearings and carbon-brushes can usually be undertaken by a person with no particular mechanical skill after a single day's instruction. Gas-engines will not usually give satisfactory results in the hands of persons with no previous mechanical training, but commonly require some attention from a machinist or engineer. The average daily care is fully as much for a gas-engine as for a steam-engine, the boiler not considered. A steam-boiler must have attention and be fired at frequent intervals when in use, and in many locations a licensed engineer is required by law for the operation of all steam-power plants. Steam-power equipment obviously demands, therefore, more attention than that of electric-motors or gas-engines.

Considerations above pointed out are of varying weight, depending on the character and uses of the building where the machinery is to be located, and the amount and kind of labor necessarily employed about it for other purposes. While the items above enumerated are often difficult of proper estimate in dollars and cents, the remaining factor, that of cost for the materials or energy consumed by the power-giving machines, is usually capable of fairly accurate determination.

Taking first the case of the steam-engine and boiler: it is quite certain that the average plant under twenty horse-power capacity will consume not less than ten pounds of coal per horse-power hour delivered on the engine-shaft, and many small equipments are known to require a larger amount. Taking the cost of coal at four dollars per ton, which is a low estimate, since soft coal will not usually be tolerated in these small plants, the cost of coal consumed per horse-power hour is $(400 \div 2,000) 10 = 2$ cents. There is also a small water-charge. The quantity of gas required to develop a horse-power hour at the shaft in small gas-engines, under twenty horse-power capacity, depends on the quality of the gas used, but with average city gas twenty cubic feet per horse-power is a low estimate, especially for the usual case where the engine works on a variable load.

One dollar per thousand cubic feet is a lower rate than can usually be had for gas, but on this basis the cost per brake horse-power hour is $(100 \div 2,000) 20 = 2$ cents, or the same as that found for coal. There is also in this case a small charge for water to cool the cylinder.

Coming now to the electric-motor, energy must be procured instead of fuel, and this energy can be had in a large number of cities and towns throughout the country at a rate of 3.33 cents per horse-power hour delivered to the motor. Assuming that electric-motors under twenty horse-power capacity, working on the varying loads common in practice, will deliver, as mechanical power at the shaft, 83 per cent of the energy put into them, which is a low estimate for efficiency, the cost per horse-power hour of energy actually delivered by the motor is found from $3.33 \div .83 = 4$ cents.

This figure for electric energy is twice that found for either gas or coal, but the fact that all consumption of energy stops at the motor as soon as the switch disconnects it, and that the motor retains a high efficiency at partial loads tends to reduce this ratio. On fractional loads small gas and steam engines drop very rapidly in efficiency, and where loads are intermittent, as for elevator work, the coal consumed per brake horse-power hour from steam-engines becomes excessive. Even when in constant operation, the average load in these small plants is seldom more than one-half the full rated capacity for ten hours per day. Taking an average of one-half full load for ten hours, and basing results on the figures above found, the saving per day of fuel over electric-energy cost, in a plant of ten horse-power capacity, is found from $10 (4 - 2) (10 \div 2) = 100$ cents or one dollar per day.

How far one dollar will go toward paying for the undesirable features, additional room and extra-attendance cost involved in a gas or steam plant of above capacity must be decided on the facts of each case. The fact that, in most cities where electric energy is sold for power-purposes, electric-motors far outnumber gas and steam engines combined, in the sizes named, may be taken as an indication in which the advantage lies for the average case.

ALTON D. ADAMS.

VENTILATING THE ST. GOTHARD TUNNEL.—A method of ventilating the St. Gothard tunnel was described in this column several weeks ago. It consists essentially in forcing a current of air through it in a certain direction. In one of the railway tunnels near Genoa, however, a cheaper plan is now being tried, and is reported to be giving good results. On the tender of the locomotives a cylinder of 16 cubic feet capacity is placed, containing air compressed to 750 pounds per square inch. When passing through the tunnel the air is allowed to escape through a suitable nozzle, and in such a direction that it blows the smoke back of the train, and tends to force it out of the tunnel. Of course, the suction produced by the motion of the train interferes somewhat with the desired result, but, on the whole, the plan is a success. Another method of ridding this tunnel of smoke, but abandoned on account of its great expense, was to fill the cylinder with oxygen-gas, and supply it through pipes to the fire-box of the locomotive, thus effecting complete combustion and avoiding smoke altogether. — *N. Y. Evening Post*.

FOREST MANAGEMENT IN MAINE.¹ — II.

From Chambord.

THERE is vastly more in the woods business and in lumbering than might be imagined by the uninitiated. In developing a township of land for the first time the first thing to do is to get a road to it. Along that road, as business is now carried on in the most progressive localities, is strung a telephone wire. Supplies and communication are thus assured.

Next comes, usually, improvement of the streams. Our smaller streams are generally rough and crooked. Rocks have to be blasted out of the channel, abutments built to run the logs round

sharp turns and keep them out of the swamps. Dams are constructed to control and prolong the flow of water. These improvements are costly. Some of them have a short life. They sometimes compel a concern to log heavily on a tract while they are there.

This is but a small part of the expenditure, however. On large lakes logs are towed more cheaply by steamer than by hand. Three steamboats of different sizes and patterns are employed to get past the lakes of the Rangeley system, and booms, dams and piers are needed at various points below. Again, several hundred horses are used in the woods work of the company by which I am employed, so that even in the small matter of harness no small amount of care is required to keep a supply in stock, to keep run of it in movement and to keep it in repair.

An Androscoggin logging-camp contains as a rule forty or fifty men. A woodworker and blacksmith are in every crew to supply it with tools and sleds. Two men manage the cooking, and often another has special charge of the stable and horses. The rest of the crew are divided up by the boss into squads; a teamster with a pair of horses and sled as the nucleus of each, and with him, to do the cutting, a crew of usually four men.

This crew, under present arrangements, works largely by itself. The boss of the whole crew gives it ground to work on, and spots out its main road. He tells the men in general terms what to cut, and visits them once a day to see that they are doing as they were told. Further than that, however, the men run their own work. A man of experience leads off, spotting his road and having a man to help him fell the trees. These two men also cut the log off at the top, cut the limbs off and roll or swing it to where it can be hitched onto by the team. The third man has to trim the knots close, bark the log if necessary, so that it shall drag easy, and, when the teamster comes along, help bind the load onto the sled. The fourth man, meanwhile, is ahead of all his mates, making a road by cutting out the trees and windfalls, filling up the holes, bridging brooks, etc. In our woods the men are mainly French-Canadians and immigrants from the British provinces, with some Yankees and a sprinkling of men from the northern countries of Europe. They vary much in experience and capacity. Good men, over and above board, are paid from \$20 to \$26 a month.

These are the men that the forester has to work with. This is the organization he will have either to utilize or modify in carrying out the purposes he entertains toward the forest. So far, this organization has been trained simply to rapid, clean cutting. It has had to get its lumber and get it cheaply, and that is all there is to it.

The forester, in cutting through our spruce woods, wants to leave a stock for reproduction and growth. This, of course, can best be left in the shape of young trees. No one is more interested than the forester in removing, and so saving, all dead timber that can still be used, and also any defective and declining trees. Usually, financial considerations will require much more to be taken, probably two-thirds of all the merchantable timber. If so, the forester is as interested as anybody in having that done thoroughly and well. It must be done economically, however, without waste of wood, and it must be done with as little damage as possible to the young growth which it is desired to retain. And right here, in the matter of saving and protecting the young trees to form a future stock, is where the forester meets his difficulty, both with the men he has in charge and with those who in turn are over him. The way ordinary lumbermen rip, smash and destroy young trees makes a forester sick at the stomach. And, on the other hand, the requirements imposed by his employers in respect to the amount of timber that shall be taken, the form in which it shall be got out and the expense of the operation make it often very difficult to do anything effective for the land. Not the least of the obstacles encountered is the logging-boss. As a rule, he is very efficient, but having up to the present been a despot in his own domain, he is often as opinionated and self-willed an individual as can be met with.

Nothing will convey so clear an idea of the problem involved as comparison and a brief record of experience. In the Adirondacks, under the lead of Messrs. Pinchot and Graves, now of the United

States Forestry Division, large tracts of spruce-land have been taken in hand, carefully surveyed and examined, and cutting work has been begun in accordance with a carefully-studied plan. The ground to be cut through there is traversed the summer before by the forester, and every tree that is to be cut is marked. The cutting itself is very strictly supervised, and no departure from the work marked out is allowed, except for the strongest reason. Lumbering methods in the Adirondacks differ somewhat from those of Maine. There is less road cutting. Timber is cut into 13-foot logs where it is felled, and dragged from the stump onto yards by one horse. Now Pinchot and Graves state, in their volume, "*The Adirondack Spruce*," that in this way they can take out of the forest just such trees as they want, and do practically no damage to the remaining growth. A statement of what they found to be the average stand at Dr. Webb's Ne Ha Sa Ne Park will make the matter clear. For spruce alone they found 158 trees per acre under two inches in diameter, 75 trees 2 to 6 inches diameter, 37 between 6 and 10 inches, and 31 trees 10 inches and over in diameter that would scale about 3,700 feet. In reference to these they state that the 31 trees per acre over ten inches in breast diameter can be cut out and yet leave practically all the 37 6 to 10 inch trees and the 233 of still smaller sizes to form, as they would, a good growing stock on the land.

In my experience of one year, under conditions outlined above, no such results were attained as that. First, as accounting for that, was the character of the timber-stand. Here, for instance, is the average stand of about fifteen acres calipered over on one particular tract. Spruce over four feet high and under six inches in diameter numbered here 64 per acre. Trees from 10 inches in breast diameter, inclusive, down to 6 inches number 29, and would scale, if cut, about 800 feet. Trees 11 inches and up in breast diameter numbered 47 per acre, and would scale somewhere about 8,000 feet. We have here a larger amount of merchantable timber per acre than in the Adirondacks. It is, however, due to size rather than to the number of merchantable trees, while the number of small trees ready to form the succeeding stand is far less than there. To the landowner, in consequence, the grown timber is of more concern proportionately than the small, and the forester's task of keeping the land stocked is, outside of the natural disadvantages, rendered more difficult.

Again, the forester's work was impeded by the business conditions. The lumber cut on the tract I speak of was to be used, all the largest and best of it, in the saw-mill. It was essential, therefore, in order that it might saw to advantage in filling orders for timber, that it be cut long. The logs were, in fact, cut as long as could be driven out of the stream, 35-40 feet. When a tree would make more than that it was sawed into logs. Now the heavy logs on rough ground required two horses, particularly as they were not being bunched up into small yards for a wagon-sled haul, but being dragged often a mile or more directly to the river. Now a road has to be cut out wide for two horses loaded with long logs to get through, and many young trees in consequence are sacrificed. Nor was that the only disadvantage. The weight of a big butt log was heavy for men to handle. It could not be moved far, but trees had to be laid in felling close to the road where the team could get at them, while stuff had to be laid crosswise to roll it on and keep it from bedding down in the snow. Thus, in thick timber along a road practically everything would be cut or smashed, and about all that was left would be in the strips between. Much of this could not possibly be helped under the conditions and within reasonable limits of expense. It is often the case that the thinner stands are left with the more promise of growth upon them.

Still, something could be accomplished, and that appears on all accounts worth while. Setting a general size-limit of 12 or 15 inches breast-high, according to the stand, the crews would go through a country, cutting out the dead stuff and the larger timber in a more or less bunchy fashion. On knolls and divides particularly exposed to winds they would be required either to cut everything or let everything stand. The ideal could not be accomplished anywhere. Some timber would be left above the size-limit, some that had no promise of growth in it. On the other hand, more than a third of the small stuff would be cut or smashed down. This, of course, would be hauled and used when large enough to be handled without loss, but it was material which we should have preferred to have grow. As a net result, we would leave usually from 1,500 to 3,000 feet of growing timber on the land.

This is descriptive of a first attempt. In large measure it illustrates how not to do it. It is clear to me that if we are to do anything worth while in forestry our organization in Maine must be tightened up. This is necessary in order to accomplish the purpose of forestry, to leave the land in good shape to grow, but I believe it will pay on the score of simple economy of wood and labor. In particular, if we are to leave our forests in shape to do their best in the way of wood-production, the choice of the trees that are to be cut must not be left to ignorant and shifting choppers, but the trees must be marked beforehand by some one who understands the methods and the purposes of the work. In my opinion, the logging boss and not the forester is the one who in the conditions of our business here can best do that work.

In adherence to the main purpose of this address, I cannot omit a brief reference to another and in itself a more attractive branch of the forester's business, tree biology and the theoretical grounding of forestry work. Take the matter of tree-growth, for instance, the measurement of producing capacity.

¹ A paper, by Austin Cary, A. M., Forester to the Berlin Mills Co., read before the Boston Society of Civil Engineers, May 10, 1899, and published in the *Journal of the Association of Engineering Societies*. Continued from No. 1241, page 6.

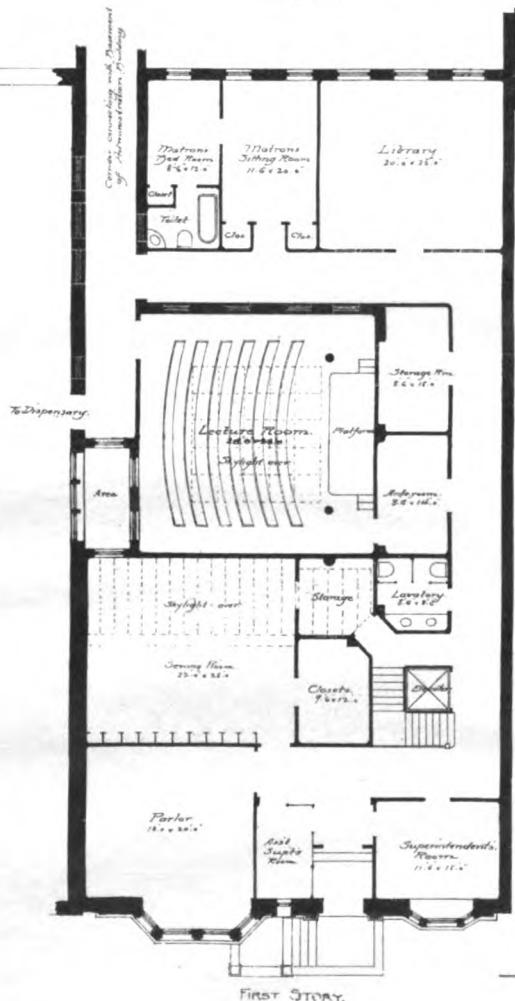
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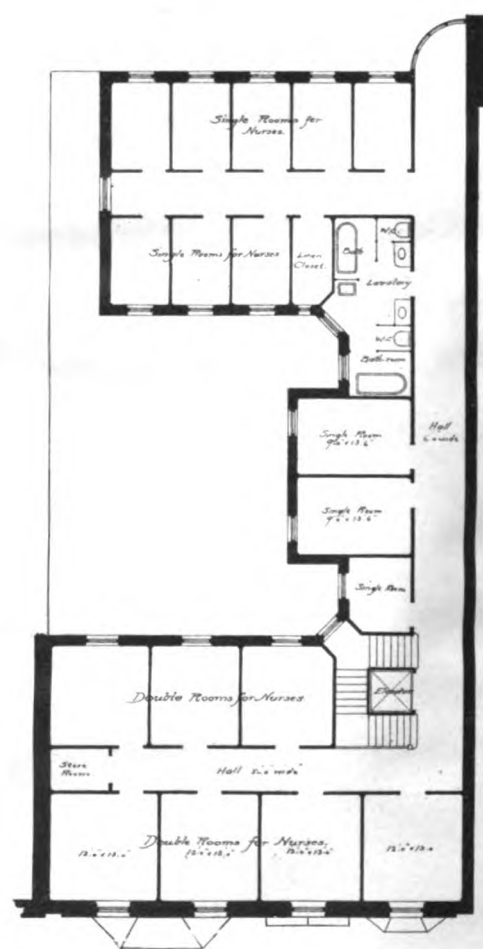
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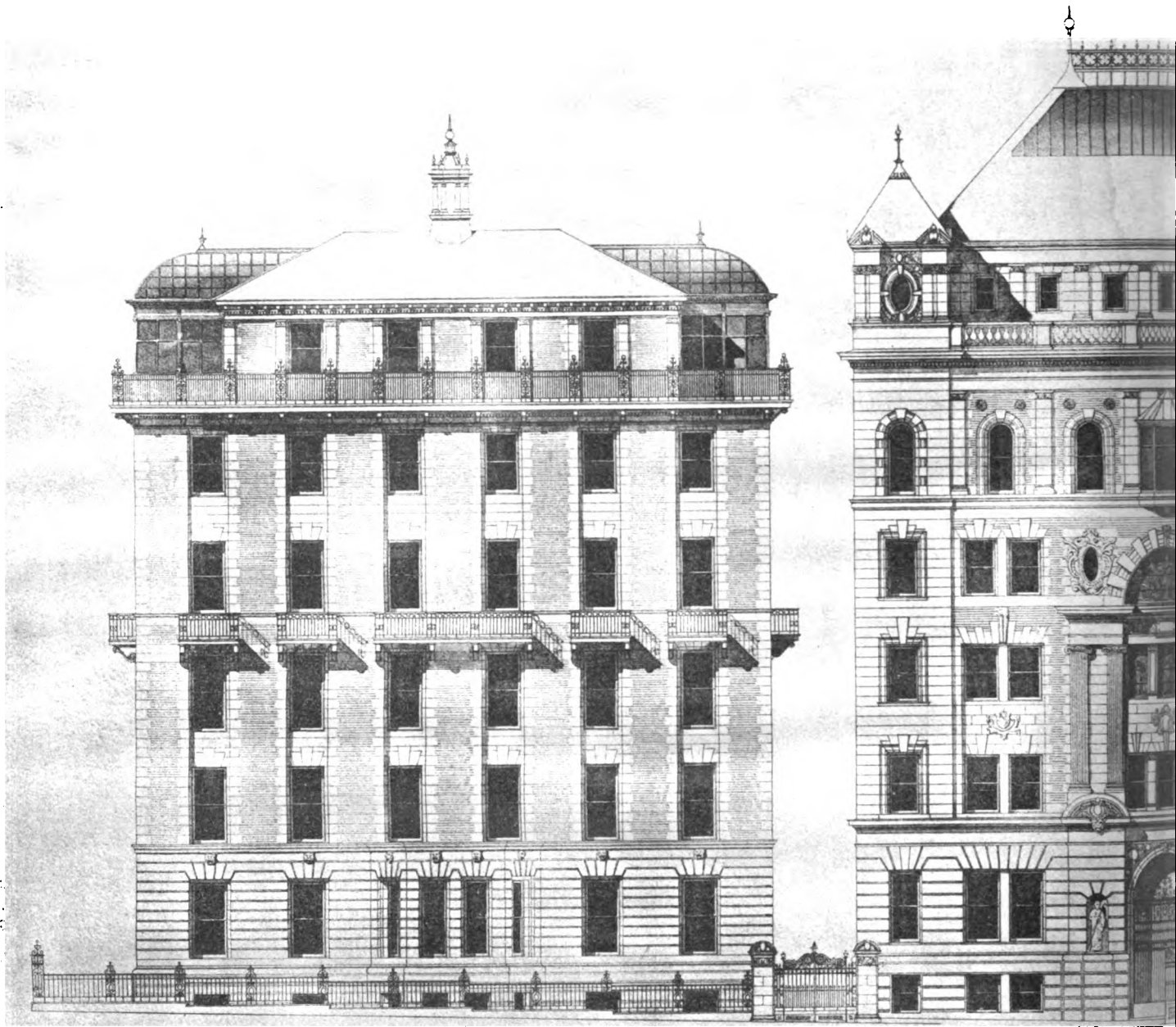
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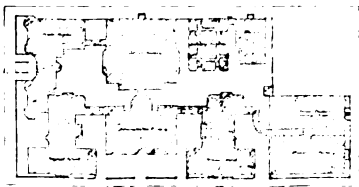
Training School.

COMPETITION DRAWINGS
FOR
MOUNT SINAI HOSPITAL
NEW YORK.



— *Surgical Ward.* —

— *Administration.* —

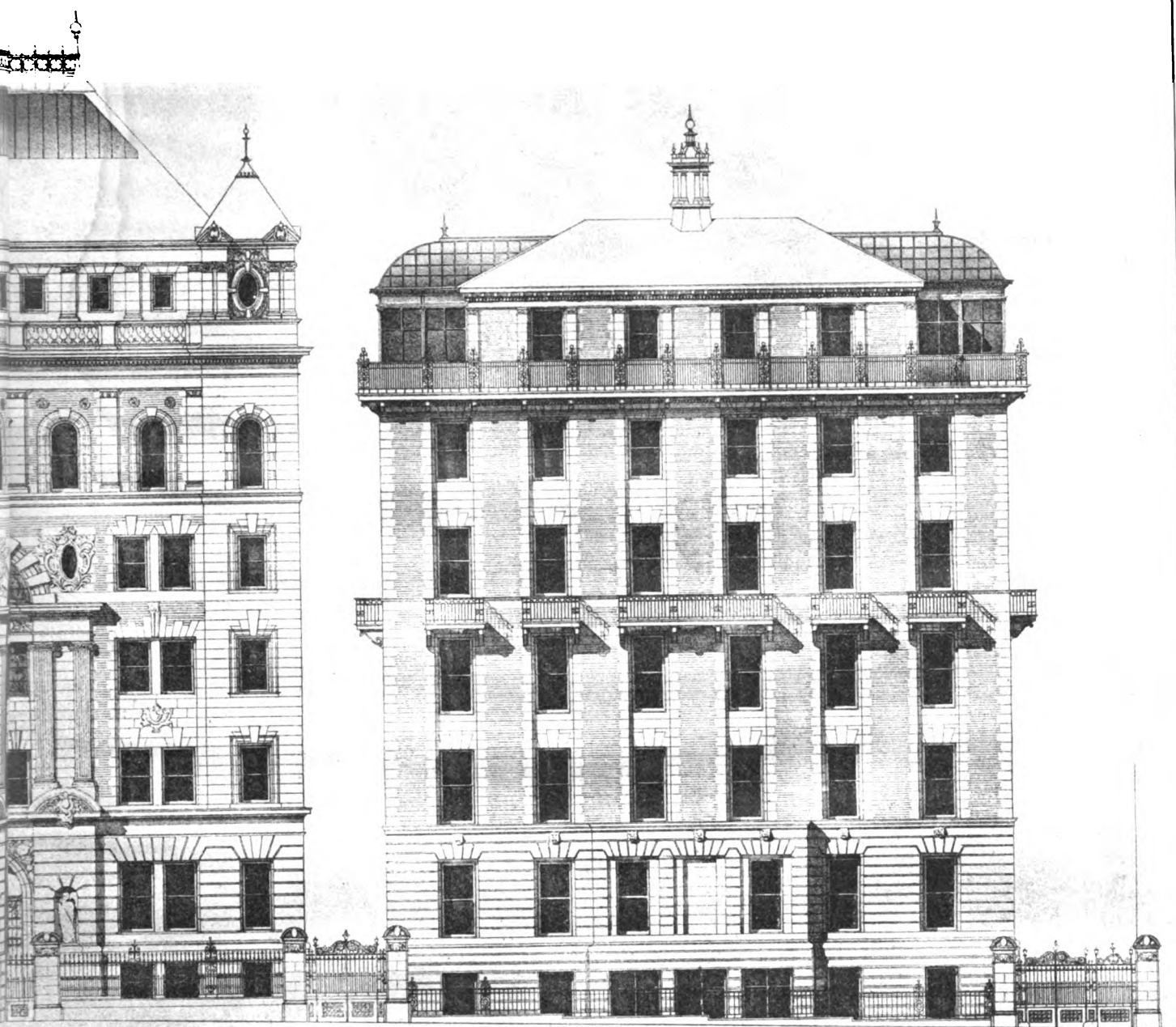


— *Ground Plan.* —

COMPETITIVE DESIGN FOR MOUNT
MOUNTAIN
NEW YORK

A COMPETITIVE DESIGN FOR MOUNT

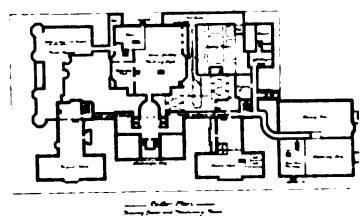
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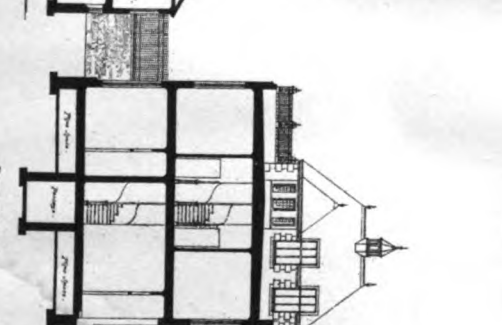
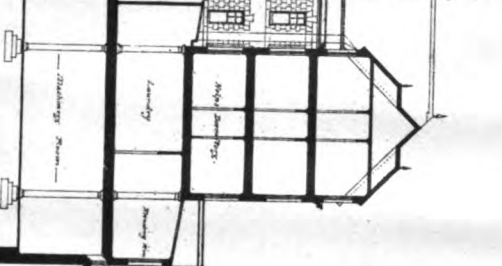
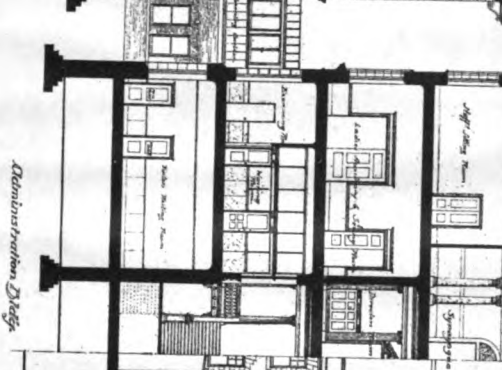
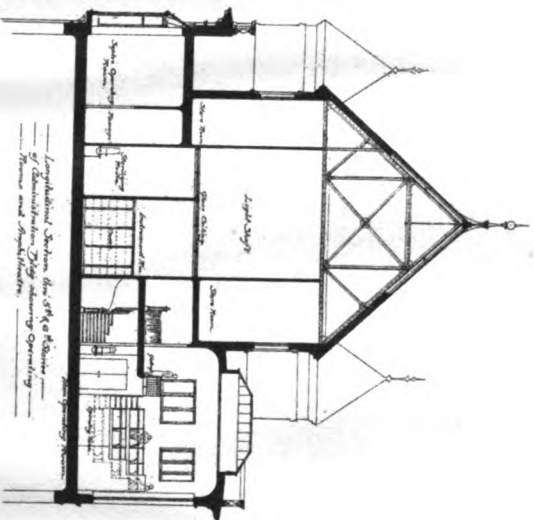
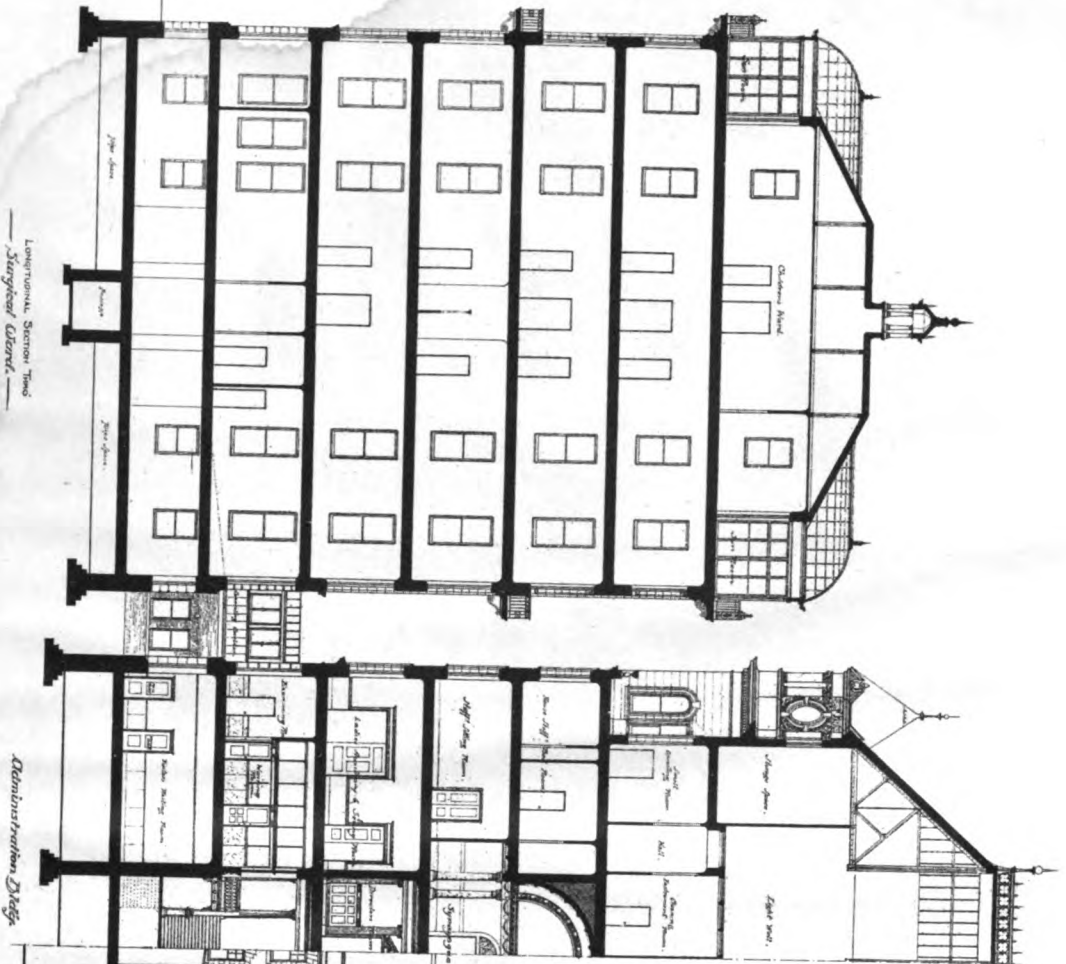


Building.

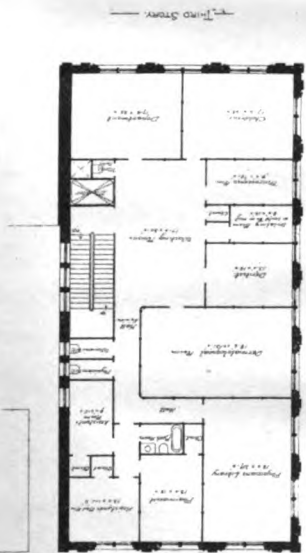
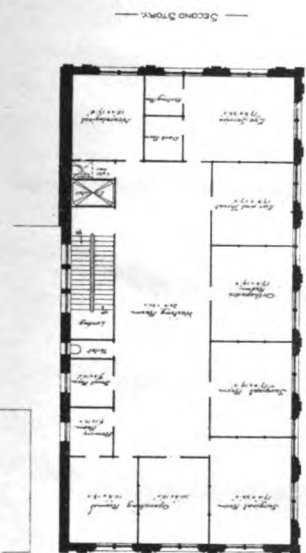
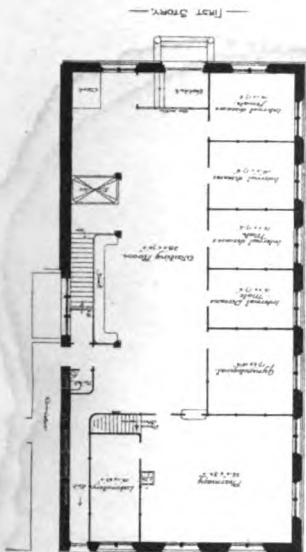
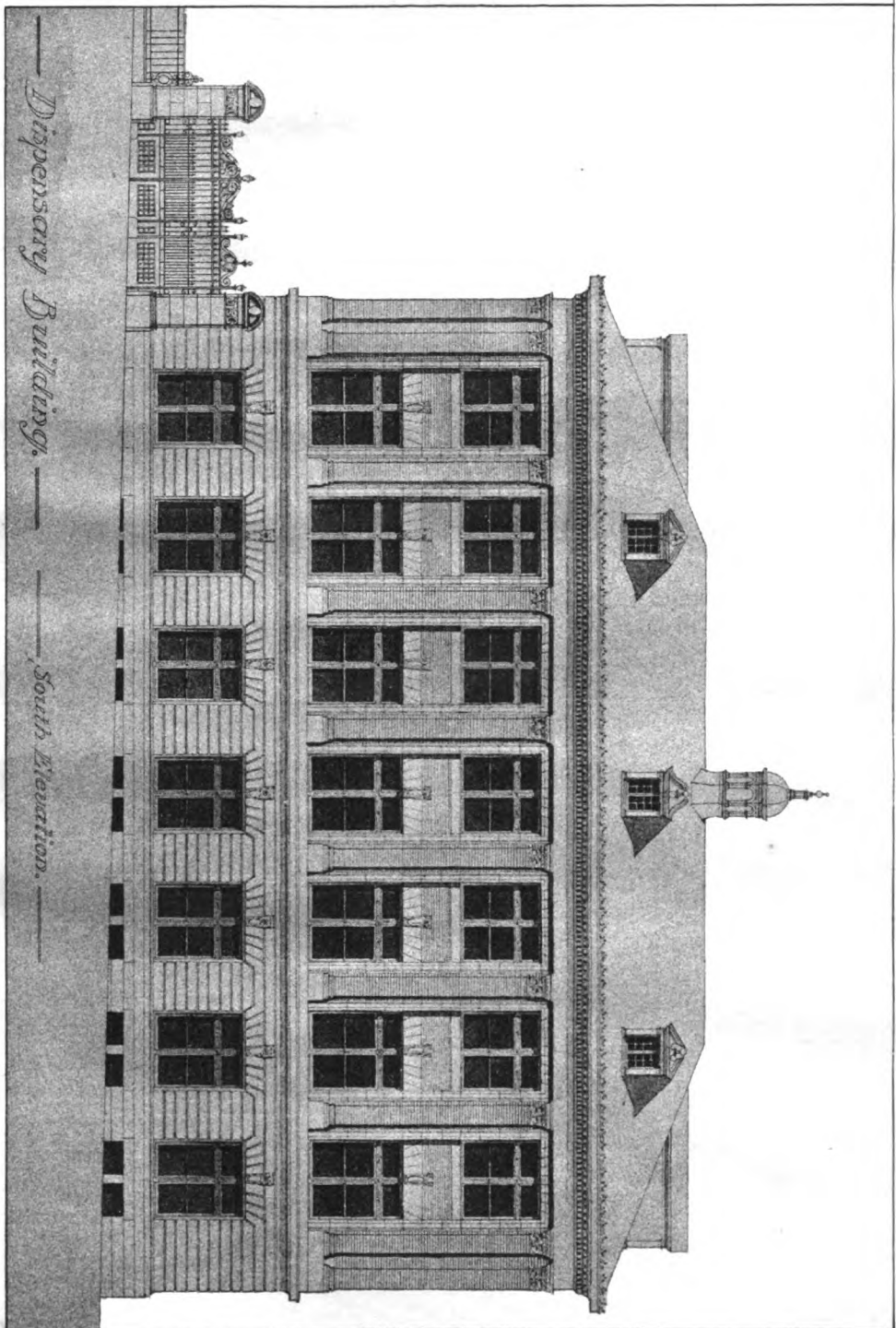
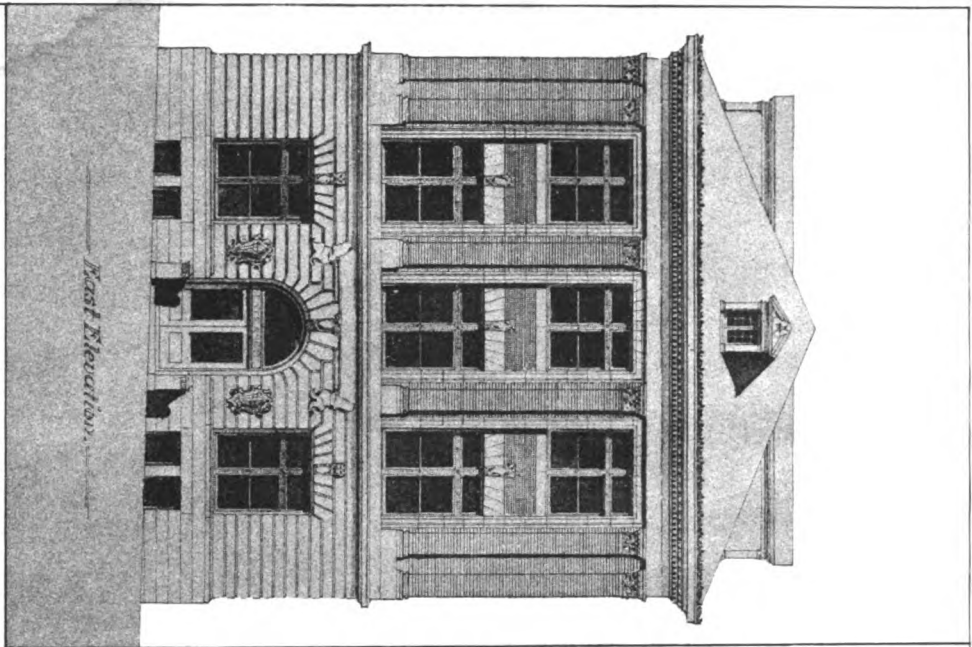
Medical Ward.

SINAI HOSPITAL





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COMPETITION DRAWINGS
FOR THE
MOUNT SINAI HOSPITAL
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A COMPETITIVE DESIGN FOR MOUNT SINAI HOSPITAL

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Each year's wood-growth of a tree is deposited in a ring surrounding on all sides its previous volume. The boundary of each year's growth is usually well marked, and the thickness can consequently be measured. In practice it is better to measure the rings in groups, say of ten each, beginning at the bark. The numbers of rings, taken at several log-cuts along the length of a tree, give us, with the diameter of each section, the means of computing the tree's growth for the last decade or for any preceding period. That gives us the individual tree. Hundreds of such computations, made on trees of different thrift and size, allow us to average, and, taken in connection with surveys of number and size of trees the country over, enable us to estimate the growth in a valley or a township.

From the same observations inferences of great value are drawn as to height-growth. If a tree, at the ground, has 200 rings, we know that it is, at least approximately, 200 years old. If 20 feet above ground we find 150 rings we know that the young tree consumed fifty years in growing to that height. So on up through the number of sections.

The facts are best represented in graphical form. Thus, a spruce growing on a piece of burned land at Moosehead Lake was cut down, leaving a stump a foot high. There were 98 rings in it. Fifteen feet above there were 77 rings in the section, showing that 21 years were consumed in growing that height. Ten and one-half feet higher there were 66 rings, and the same distance above 53. The tree, as cut, was 65 feet high, and, allowing 10 years of height-growth for the stump, it was grown in 108 years. These facts are represented in curve 1 on the diagram, which will need no further explanation.

The value of this method of representation will be best brought out by comparison. Curve No. 2, for instance, represents the height-growth of a spruce which grew in the neighborhood of the other tree, and in the same conditions, except those of soil. It was standing, in fact, on a bed of rocks. No. 5 is the curve of a white-pine which grew up with the first spruce, and was of the same age. It shows the rapid production of that species.

Curves 3 and 4 are still more interesting. They represent the growth of spruces which stood in mixture with hardwood in forest whose history had been unbroken for centuries, which had trees of every age and size. Young trees starting in such conditions have to bear shade; they grow slowly for many years, and only perhaps after a century of struggle do their tops get out into free sunlight. And the point is that our spruce can survive and retain its vitality through a long course of such treatment. The tree represented by curve No. 4, for instance, at 125 years of age was only 15 feet high, and contained probably less than one cubic foot of wood. Yet, even by that treatment, the vitality was not crushed out of it. Getting finally free from suppression, it began a height-growth equal to that of young trees which never had been suppressed.

Now, study of our spruce-timber shows that the bulk of it has come to us through some such history as this. Knowledge of this gives us an important rule for guidance in management. That is, that young spruce in our woods, no matter if they are thin-crowned and seedy-looking, yet retain their vitality, and if in our cutting we will at the same time protect them and open them to the light, they will reward us for it. This is one great advantage of our spruce. The species is remarkable in this respect.

Last in this line I will present some figures on the volume growth of spruce-trees, illustrating what that is in percentage and actual amount. The trees taken for observation ranged from 7 to 14 inches in breast diameter. They were 340 in number, and observed results have been arranged and evened by drawing curves. Inspection of the last column, the amount of yearly growth in wood, shows that growth steadily increases as the tree grows larger; that up to the largest size here represented there is no slack. From this point-of-view trees of this size are not ready to cut.

Growth of spruce on thrifty spruce-land on the Kennebec River, Maine, in volume and per cent. From third report of the Maine Forest Commissioner:—

GROWTH LAST TEN YEARS.

Breast Diameter.	Volume of Tree.	In Diameter, Inches.	In Per Cent at Compound Int.	Yearly Growth in Cubic Feet.
7 inches.	6 cubic feet.	1.1	4.3	.26
8 "	8 "	1.15	4.1	.33
9 "	10.5 "	1.2	3.7	.39
10 "	14 "	1.23	3.25	.45
11 "	17.5 "	1.23	2.9	.51
12 "	21.5 "	1.23	2.6	.56
13 "	26 "	1.22	2.4	.62
14 "	31 "	1.2	2.2	.68

The column next preceding shows the percentage that the year's growth bears to the volume of the tree in the different sizes. Here the course of the figures is the other way. According to the table, a quarter of a cubic foot on a tree 7 inches in breast diameter amounts to 4.3 per cent, while twice as much wood on a tree 11 inches through amounts to but 2.9 per cent. Here the forester is checked by financial considerations. The larger he lets his trees grow the smaller is the rate of interest earning on his capital.

Much might be brought out in this connection. I will draw only the practical inference that one prime object of the American forester, who will be required to gain as rapid returns as possible, must be to change over the stand as nature gives it to him, with its large

trees and comparatively small rate of accretion, into a thick stand of smaller timber more quickly growing and reproducing. That is particularly applicable to spruce when it is to be used in paper-manufacture.

For the present, however, all these matters will be secondary in the mind of the working-forester. Conditions vary through the country, and everywhere investigation and instruction have their field. But the man who, in conditions similar to those of Maine, is bent directly on the task of bringing forestry actually to pass, will endeavor to secure first the right financial conditions for his work, and secondly to so organize woods-work that it will carry out his purpose toward the land in lines both simple and plain.

I wish to present one more topic, a topic of an engineering nature. Men of your training do not have to be told that topography determines very largely the course of all woods-work. Neither do you require to have explained the usefulness of a topographical map. Every lumberman is a topographer in a sense. Clear knowledge of topography is essential to the man who, from a central point, directs the conduct of a large business. So far in the lumber business each man has learned his own topography by cruising, and has carried it in his head. The limitations of this system are evident. Such knowledge is inaccurate in the first place. Then it is likely to be forgotten, and it cannot be conveyed to another man. The loss is particularly evident when one manager drops out of a business and his successor has to acquire his knowledge of locality all over again.

In the autumn of 1896 I had the good fortune to be sent by the Hollingsworth & Whitney Co., of Waterville, Maine, to make what I suppose is the first genuine topographical survey ever made of a New England timber-township. The results, in the shape of a contour-map and a model, proved so much of a satisfaction to the company and its superintendent that other concerns were led to desire the same thing. Thus I have been employed to survey in all about 125,000 acres. I think, furthermore, that in the economy of the spruce forests of New England topographical mapping has come to stay. A brief description of the methods employed in this work, developed as they have been in the work itself, with the aid of such hints and helps as could be got from outside, may be of interest to members of the Society.

The basis of the height-work is levelling. If possible, connection is made with points known from railroad-levels or otherwise, giving thus elevation above sea; then a line of levels is run over roads, or whatever else may be the best route to run on, to the ponds and other suitable marks, well distributed through the township to be surveyed. From the points so determined by level I work off with aneroids, returning for correction as often as may be to some accurately known point. Two aneroids are usually carried; a thermometer is read with them as often as necessary, and changes of pressure due to the weather are recorded meanwhile by a barograph run by an eight-day clock located at the main camp.

The low accuracy of aneroid measurement is well known, but when carefully used with the aid of the accessories noted above, the aneroid suffices entirely for the purpose. A timber-land manager does not require to know, for instance, exactly how high a given mountain is. The approximate relation of things is what he wants. The areas of valleys, the positions of streams and divides, the shape and steepness of the land, the grade of future roads,—these are essential points. Then the passes and their neighborhood often require especial looking over, because it is sometimes very desirable to haul timber from one drainage to another, if that can be done without too much uphill work. In getting at all these points a land level has frequent use, in addition to the aneroid, or, better still, an Abney clinometer.

In these surveys the land has ordinarily been blocked up ahead of me into mile squares. It was a great advantage if, when the lines were run, marks were left every quarter-mile. Then one could locate himself quite accurately on a line by pacing and without going very far. These marks serve also as the starting-point in examining the interior of a lot. For instance, after having traversed the lines of a lot, noted the crossing of brooks and divides, taken the height of essential points and noted or sketched whatever topography could be seen, I might start from the middle of one side to run a line across the lot. In doing this I often use a staff compass with 3-inch needle and folding-sights, but perhaps more frequently a common pocket-compass with needle less than 2 inches long held in the hand. Indeed, direction can sometimes be held more closely with the latter instrument. For instance, a man climbing over the debris left by cutting or shoving his way, head down, through dense thickets of young fir, loses direction in the course of a few rods. Now if he has a compass in hand he will stop and look at it. He will do so less often if he has to set a staff, level his instrument and wait for the needle to come to a stand.

Meanwhile distance is kept by counting steps. Six or seven years ago, when I first tried to keep run of distance in this way, in retracing old woods-lines, I found I required about 2,400 steps to the mile. Later on, either because with practice I became longer gaited or because, without knowing it or meaning to, I discounted more, the number required became less. I found at one time that I was using 2,200, and finally I got down to 2,000 to the mile. There I expect and desire to stay, because at that rate notes plot so readily. In field sketches and in final maps I have so far used a scale of 4 inches to the mile. On that scale, at 2,000 steps to the

mile, 100 steps are two-tenths of an inch, and a half-inch square, or a piece of ground 250 steps on a side, constitutes 10 acres.¹

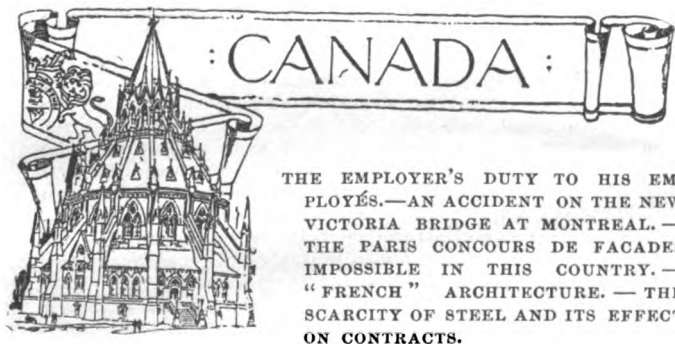
By one who has practised it, measurement by pacing can be made, even in rough land and bad walking, much more accurately than would be supposed. One travels along, looking at the country, keeping his count in some back corner of his mind. Every hundred passed is marked down or scored by breaking an elbow in a tough twig carried in the teeth or hand. When a brook is passed or a change in the land occurs note is taken, the barometer read and the count begins again. Steps taken to get round obstacles are not counted, and on strong slopes discount is made. On very steep ground, indeed, steps taken are not a guide to distance, and judgment has to be resorted to in order to fill in the count. As first remarked, however, long practice enables a man to reach greater accuracy than would be supposed. Thus, I am seldom out over 400 steps from the 2,000 in crossing a lot. The count tells me when a line is approached, and enables me to pick it up with certainty, though it may be blind. Then I go right or left till I hit a quarter-post, and so ascertain the variation from the true compass-course. By this means locations are made with considerable accuracy along the whole line.

What has been said makes it evident that a pedometer in just this kind of work can have but little use. It answers very well in smooth going, but its readings are no guide to distance on rough land. In my work it has been used merely as a matter of interest, to estimate the number of miles travelled in a day or on a whole job. It is, in fact, a good deal of satisfaction after cruising a rough township, perhaps half-covered with brush-heaps and blow-downs, to figure up and tell the company just how far I have been.

On simple ground, running once across a lot serves, with a traverse of its boundaries, to give topography sufficient for the purpose. Elsewhere there are roads and streams to locate and divides that should be carefully put in. Here compass and pacing are still used, tying in to the lines as often as may be. Travel in parallel straight lines, however, has advantages if it is sufficient for the immediate purpose in hand. It is more accurate, in the first place. Secondly, if, as will no doubt be usual, the timber-land topographer also understands timber, and is expected to report on its character and amount, systematic travel of this kind insures his seeing a fair sample of all the land. Timber-estimates in the past have been notoriously inaccurate and misleading in their results, and one great cause of this has been that the men who made them did not see all the land. Of the accessible parts, perhaps of the good parts, they saw too much. They did not fairly balance the whole or correctly allow for the waste land. One man of my acquaintance, realizing that fact, says that in looking over land for purchase he makes it a practice to go first where no timber is to be found. Better than that is some systematic arrangement that causes one to see a sample of every part, and travel in straight lines, evenly spaced, will do it.

So far, our maps have been constructed on the scale of 4 inches to the mile, and 50-foot contours in the rough land with which we have to deal serve to represent the topography. In addition, as a result of the examination, timber-maps are constructed showing the character of the growth and the amount of merchantable timber judged to be standing on the land. On these sheets the progress of the cutting can be drawn in succeeding years. These timber-maps are of transparent tracing-cloth, so that they can be laid over the topography and the two seen in relation. Lastly, since contour-maps are not easily read by most woodsmen, topographical models are constructed out of cardboard or veneer. These are perfectly comprehended by any person. With their aid a contract can be let or plans of work talked over in the office with the same clearness as to main features as if men were on the land.

The survey and mapping of a township six miles square has ordinarily cost me about two months' work, two weeks in the office and six in the field. A township can be gone over conveniently from about four camps. If there are on the land places to live in, the topographer requires the help of but one man.



THE EMPLOYER'S DUTY TO HIS EMPLOYÉES.—AN ACCIDENT ON THE NEW VICTORIA BRIDGE AT MONTREAL.—THE PARIS CONCOURS DE FACADES IMPOSSIBLE IN THIS COUNTRY.—"FRENCH" ARCHITECTURE.—THE SCARCITY OF STEEL AND ITS EFFECT ON CONTRACTS.

JUDGMENT in a case which has universal application wherever, at least, building operations are performed has been given by the Superior Court at Montreal. In delivering judgment, Justice Archibald said, "An employer has no right to use means which offer

a constant danger to his employées when other means, perhaps a little more expensive, and a little slower in operation, would have avoided the danger, nor can he excuse himself by alleging that he had warned the employé of the nature of the danger which he was running. It is not the duty of the employer to guarantee the lives and limbs of the men acting under his orders, but it is the duty of the employer to use means as safe as are practicable in the performance of his work."

The particulars of the case are interesting. One Scanlon sued the Detroit Bridge and Ironworks Company for damages for injuries received when in defendant's employ, engaged in the construction of the great railway-bridge that superseded the celebrated Victoria Bridge built by Stevenson at Montreal. Plaintiff, with other workmen, was employed in removing the iron floor of the old tubular-bridge under orders of defendant's foreman, and it was his duty to fasten the hooks of the derrick-chains upon the cross-beams of the portions of the floor which were to be removed, which were then, by means of the derrick, lifted and carried over, and piled on one side of the new structure. These pieces of flooring of the tubular-bridge were six or seven feet wide by the width of the bridge, and had two cross-beams bolted to the plate-iron which formed the tube. The chain which came down from the derrick was provided at its lower extremity with two short chains having at the ends, hooks, or, rather, clamps. These clamps were then attached by the workmen under the flanges of the cross-beams, and as the chain of the derrick was pulled up, the clamps would grip the beam and so the whole piece be raised. The derrick had to work among the braces of the new bridge and the boom of the derrick would not swing over, so as to carry the iron sideways. A second derrick, provided with a chain, which was hooked into a ring on the other chain, was necessary. When the iron was raised a few feet by the first derrick, the strain was gradually transferred to the chain of the second derrick; the chain of the first derrick slacked until the iron was hanging directly beneath the boom of the second derrick and was then deposited on the pile, free from the railway tracks. The workman found it difficult to prevent the hook of the second derrick's chain from slipping out of the ring while it was being hoisted by the first derrick, and the men were in the habit of riding upon the iron so as to be able to keep the hook in its place in the ring. The plaintiff was one day riding thus on the iron, standing between the two cross-beams and holding on to the chain. As the strain was put upon the chain, one side of the iron lifted before the other, and as the whole mass was raised, a bolt that secured the cross-beams to the iron-plate gave way; the cross-beams fell together and the plaintiff was injured.

The defendant said that frequent warnings were given to the men not to stand between the beams or cross-pieces, and that the plaintiff disregarded the warnings and was himself to blame for any injuries he received. It appeared, however, that it was necessary for the men to be upon the iron which was being moved, in order to attach the chain of the second derrick. The danger to the men would be just the same, whether they were standing between the cross-beams or not, because the chains and pulleys would, if they gave way, kill, or seriously injure, the men working with them. The danger of the work ought to have been known to the defendants, and presumably it was known to them, seeing they warned the employées against standing between the beams. It is manifest that other means might easily have been employed to prevent any danger arising from the giving way of materials in connection with the removal of the iron. The accident was caused by the negligence of the defendant company, and judgment for \$750 was given the plaintiff, with costs.

The establishment of the prize scheme of the Corporation of Paris for the most beautiful houses erected in the year in that city calls forth a few remarks from the *Canadian Architect and Builder*. According to the terms of the awards, the architect is to get the prize, and the owner is exempted from one-half of his tax for local improvements. "What," asks the *Canadian Architect and Builder*, "would be the fate of such a prize in the hands of aldermen of an American or Canadian city? Among the list of applicants each would soon find some one whom he would like to help along, and would he be likely to stand in his way on the question of a little matter of appearance, that is of no consequence?"

It is to be feared that the writer has only too good and strong a reasons for his opinions of the honor of aldermen in general, but there is another reason for objecting to aldermanic control of such a prize, and that is, that however honorable our aldermen may be, as a rule, they are men who know next to nothing about art or the beauty of architecture. Such a prize competition would be altogether out of the question in these countries. As the paper quoted observes, "we have no tradition, no standard and no prevailing excellence." Before such a scheme could be organized, a long course of training would be necessary and imperative, for not only aldermen, but for the public, and, sad to say, for most architects too. The various local guilds for civic improvement that have recently been inaugurated are for the most part composed of men professing some knowledge of art, and are the outcome of a desire of artistic-minded men to counteract the influence of mere sordid monetary considerations. It is to such guilds, rather than to the aldermen, that people in the United States and Canada must look, and from them must emanate such encouragements towards improvements in design, if they are to come from any body. But these men who compose the guilds need to have the courage honestly to voice their inward convictions as to the merits of improvements, or they are a farce and worse than useless. As far

¹ Much help has been received on this and other points from the methods of the U. S. Geol. Survey in Michigan and Wisconsin, as communicated by Prof. W. S. Bayley, of Waterville, Maine.

as the design of domestic buildings is concerned, it will be many a long day before any one would be justified in offering a prize in this country at any rate. Style is unknown; character and proportion disregarded; composition is a matter of no consequence whatever. Theory may be all very well in its place, but its place is apparently outside the boundaries of the Dominion. A little dabbling in elementary construction makes a youth of twenty a full-fledged architect, with a "shingle" or "sign-board" at an office door. As an example I may mention that a young architect recently told me he was "going in for French." "French" was everything, every other style was "rot." No one with any pretensions to be called an architect would design in anything else but "French." I replied that all this was very interesting, and no doubt "French" was O. K., but what date of "French" did he particularly favor? I do not think my young friend has ever mentioned "French" since. He was just out of his fourth year in an architect's office in the States, and proposed to open an office for himself.

The scarcity of steel is beginning to be felt in Canada, a good many buildings being delayed for want of it, and the construction of others being postponed. Up to the present steel has not been very largely used in Canada for building purposes. We are, however, in the transition stage, and lightly constructed steel-framed buildings are to be seen going up beside the heavy, solid, four and six feet thick walls erected only a few years ago. One sign of the inability of contractors to secure steel is found in the fact that the Quebec, Hamilton & Fort William Navigation Company, who have been advertising for tenders for the construction of two steel vessels, at a cost of about \$250,000, have so far received no replies. The Company intends to send a representative to England and close the contract there. The question has arisen as to how contracts are affected by the impossibility of providing steel. A contract has been entered into for the completion of a large steel-framed warehouse by a certain date. At the time of signing no thought was entertained that there would be a difficulty in obtaining the material. The difficulty having grown now into almost an impossibility, the question is asked who is to bear the brunt of it. The law, however, seems to be quite clear on the subject. If the contractor is one who does not include the production of steel among his works, but would have to order the steel from some one else, so long as he has given the order for the steel, he is not responsible for its non-delivery. If, however, the contract is entered into direct with a steel producer, and he failed to ascertain that he would not be able to complete his contract, he has only himself to blame and is held liable.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

A COMPETITIVE DESIGN FOR THE MOUNT SINAI HOSPITAL, NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print issued with the International and Imperial Editions only.]

GENERAL PLANS AND SECTION OF THE SAME.

GENERAL ELEVATION OF THE SAME.

THE DISPENSARY BUILDING OF THE SAME.

THE TRAINING-SCHOOL OF THE SAME.

[The following named illustration may be found by reference to our advertising pages.]

NEW BAPTIST CHURCH AND SCHOOL, ACTON BRIDGE, ENG. MR. FRANCIS P. MELSALL, ARCHITECT.

This plate is copied from the *Building News*.

[Additional Illustrations in the International Edition.]

A COMPETITIVE DESIGN FOR THE MOUNT SINAI HOSPITAL, NEW YORK, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print.]

THE MANHATTAN HOTEL, 42D ST. AND MADISON AVE., NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print.]

THE MAIN STAIRCASE-HALL: MANHATTAN HOTEL, NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print.]

THE ROYAL HOTEL, NORWICH, ENG. MESSRS. EDWARD BOARDMAN & SON, ARCHITECTS.

NOS. 74-78 HIGH ST., DEPTFORD, ENG. MR. LOUIS JACOB, ARCHITECT.

RESIDENCE AT WIMBLEDON, ENG. MR. J. H. EASTWOOD, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

JURISDICTION OF THE GOVERNMENT OVER ITS BUILDING SITES.

TREASURY DEPARTMENT, OFFICE OF THE SUPERVISING ARCHITECT, WASHINGTON, D. C., OCTOBER 4, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I notice in the current number of the *American Architect and Building News*, an editorial bearing on an incident of recent occurrence growing out of an attempt on the part of an electric-lighting and heating company in the City of Camden, N. J., to place one of its poles in the sidewalk in front of the new Federal Building in that city. As it is apparent from the tenor of said editorial that you were not put in possession of the facts and the law involved in this matter, I venture, in the interest of preventing a wrong impression from gaining currency, to make the following statement:—

This Department did not, in this case, attempt the exercise of any jurisdiction, as alleged, over the sidewalks of the city. On the contrary, it expressly disclaimed any jurisdiction outside of its lot lines, though, under the laws of the State, abutting owners have a title, subject to the rights of the city, to the centre of streets.

Under the provisions of the laws of the State of New Jersey, power is given to electric-light, power and heat companies, etc., "to use the public roads or highways, streets, avenues, and alleys in the State for the purpose of erecting posts or poles on the same to sustain the necessary wires and fixtures, upon first obtaining the consent, in writing, of the owners of the soil," and subject to such regulations as may be imposed by the corporate authorities of cities and villages.

In this case the company did not secure the consent of the Government's agent for the erection of the pole, and its attempt to place the pole in position without having first secured such consent resulted in the arrest, at the instance of the city, of the persons engaged in said work.

As to your statement that the United States "may be presumed to have bought its Camden tract of a private owner, whose title was certainly subject to the same regulations in regard to poles that his fellow-citizens had to submit to; and as he could not convey to the United States any rights over the land that he did not himself possess," you are advised that the jurisdiction of the Government over its sites for public buildings is not derived from grants by the owners from whom such sites are acquired, but through legislative action by the States in ceding to the United States jurisdiction over lands acquired for such purpose, without which this Department is prohibited by Section 355 of the Revised Statutes of the United States from making any expenditure on sites for public buildings.

Respectfully, J. K. TAYLOR, *Supervising Architect*.

COMMISSION FOR DISCARDED PLANS.

BINGHAMTON, N. Y., October 3, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Can you call to mind in any of your publications a case parallel to the one I am about to cite, and to which I could turn for reference?

Some time ago I was asked to make sketches for an opera-house to be built in an adjoining town. I made drawings and took them up and was told to go on and make a set of plans. I did so, telling the parties interested that it could not be built for the sum they wished to invest, and in my opinion it would have to be cut down. This they would not do, but sent out the plans to have figures on the building. They found, as I had said, it could not be built for that money and so gave it up. Now they claim that the plans were not accepted, but were rejected. I would like to find a citation of a parallel case if possible.

Could you give me any information on this matter?

Yours respectfully, E. K.

[If the opposing party and the jury agreed with our correspondent's statement of this case, there would be no difficulty about it, and any action of contract would serve as a precedent; but the trouble is that the opposing party will claim that the architect agreed, either expressly or by implication, to make the sketches on speculation, and not to ask for any pay for them unless they were approved; or, perhaps, the claim will be that the plans were agreed to be for a building to cost a limited sum, and that, as it was found that it would cost more, the contract was not fulfilled; or very probably, both these claims will be made, so that if one fails, the other will serve as a defence. We are, of course, quite disposed to believe that

our correspondent's account of the matter is correct, but it is the jury, not we, who must decide between the conflicting claims, and if they believe that there is any truth in the defences which we have assumed to be most likely to be brought forward, they will probably not award the architect much for his trouble. E. K. can tell best what sort of evidence he can offer to convince the jury of the truthfulness of his assertions, and if he has been prudent in keeping letters, and taking notes, and having witnesses to conversations, and so on, he may be successful. — *EDS. AMERICAN ARCHITECT.*

NOTES AND CLIPPINGS

HEAVY ANNUAL RAINFALLS. — The heaviest rainfalls so far observed with scientific accuracy occur in India. At Cherrapunji, in the Khasi Hills, in Assam, the mean annual precipitation is 39 feet 6 inches, and at Beundja 30 feet 10 inches, and at Bibundi 34 feet 4 inches. Both the latter stations are on the sea-coast, and at a much lower level than Cherrapunji. — *Exchange.*

THE ORIGIN OF MOLDAVITE. — We have meteorites of glass, as well as of stone and iron, if the recent conclusions of certain European geologists are to be accepted. The glassy stones of Bohemia known as moldavite, resembling the obsidian-bombs of Australia, have been a puzzle to scientific men, but have been explained by some authors as being relics of prehistoric glass manufacture. Late experiments by Herr J. Bares have shown that these objects cannot have had this artificial origin. The new theory that they are aerolites has been advanced by Dr. F. E. Sues, who finds many analogies to support this view, and points especially to the surface structure, which could not have been produced by ordinary water-wear. Other geologists are adding facts confirming the theory. Herr Woldrich points out, however, that it is remarkable that these stones, whether in Europe or elsewhere, are only known to occur in sandy deposits. — *Invention.*

EARTHQUAKE INSURANCE. — (One result of the rapid growth of seismology is the suggestion by Dr. Mario Baratta that provision should be made by insurance against the damage to buildings caused by earthquakes in certain countries. He shows that since the beginning of the seventeenth century less than forty earthquakes have been responsible for the deaths of more than one hundred and fifty thousand persons in Italy alone. Moreover, to take but one example, the great loss of life during the Ischian earthquake of 1883 was due to the fact that the buildings had already been damaged by the earthquakes of 1828 and 1881. Dr. Baratta points out some of the conditions that must determine the amount of premium that should be demanded by insurance societies. The most important is the degree of seismicity of the district; but this would be modified by others, such as the nature of the surface-rocks and the character of the buildings. — *Nature.*

ROSA BONHEUR'S WILL. — A correspondent from the neighborhood of Fontainebleau writes: "A lawsuit of unusual interest is pending in France. It appears that a fortnight before Rosa Bonheur's death, although having many near relations, the great artist bequeathed her entire fortune, funded property, house and grounds, pictures, etc., to a lady companion of transatlantic origin who had not lived with her for more than two years. Naturally enough, the relations decided to contest the will, seals were set upon papers and the house, exclusive of two rooms, for the time being in the hands of the law. Meanwhile the legatee, or presumable legatee, remains in the two rooms thus made over to her, awaiting results. I learn that in the first instance she was strongly advised by friendly interveners to come to terms with the family, but preferred a legal decision. It is sad to think (adds our correspondent) that wealth so honorably won should form the subject of litigation. The sum total must amount to a million of francs at the least. Rosa Bonheur left nephews and nieces to whom she was much attached. The great artist, moreover, had received during her long and successful career many valuable marks of appreciation from crowned heads. Perhaps several millions would be a more correct appraisement of one of the largest fortunes ever achieved by a woman. George Sand earned during her lifetime a million francs (£40,000), but, as she wrote shortly before her death, she never saved a sou. Rosa Bonheur was more French, and possessed the national gift of economy." — *Westminster Gazette.*

RELIEF PAINTING ON WOOD. — Decorator Painter Wilhelm Plinwald, of Stuttgart, has taken out a patent on an invention which admits of producing ornaments in relief on wood or stone as quickly as they can otherwise be drawn or painted. When the priming is done only a wood-color or a colored glaze needs to be applied. The new process is carried out as follows: Add to suitably-diluted size enough chalk so that the mixture can be dabbed upon the surface to be decorated. The lower ground may consist of any material, as wood, stone or gypsum. After six or eight applications and rubbing down or smoothing a layer of about five millimetres in thickness is obtained. The rubbing-down is best performed wet, with pumice-stone, whereby all air-pores are closed up, and a nice smoothness results. Upon the surface thus created an ornament is applied by hand or with a stencil, in moderately thick lines, and with not too fat a paint, in order to prevent it from running off. After the drying of the paint all the uncovered places of the surface are treated with sponge or brush and softened water, to which a little potassium bichromate is added. The result will be that the ornament put on with fat paint will remain raised, while everything else is washed away more or less deeply through the treatment. Hence a flat-relief ornament is created, which, treated with colors after drying, presents a much more favorable effect than the imitations attempted by shading. The bichromate of potassium added to the water penetrates very deeply into the mass, eventually taking away its perviousness to water. — *The Scientific American.*

THE CHAPEL AT VERSAILLES. — So bent is the French Government upon doing away with every vestige of royalty that it has just given orders for the closing of the old Chapel Royal, at Versailles. Mass has now been said there for the last time. The only occasion when the head of the Executive attended service there, since the overthrow of the empire in 1870, was during the Presidency of pious old Marshal MacMahon. Disestablished at the time of the great revolution, one hundred years ago, the chapel was reconsecrated by orders of the first Napoleon when he became Emperor, and has continued open, and used for divine service ever since. The chapel is to be converted into an additional hall for the Versailles Palace Museum. — *Exchange.*

TUNNEL UNDER THE SPREE. — The first subaqueous tunnel in Germany is at the present time in course of construction under the River Spree in Berlin. It is intended to accommodate a tramway-route connecting the Silesian Railway-station with the suburb of Treptow, and has a total length, including approaches, of 2,020 feet, 1,500 feet of which constitute the tunnel proper. Since the introduction of iron as a substitute for the older stone or brick linings of tunnels, the usual method has been to construct them of cast-iron segments, which are bolted together through flanges and lugs provided for the purpose. In the tunnel under the Spree cast-iron is discarded for the modern material, steel, which forms a cylindrical casing having an internal diameter of 13 feet 2 inches. The lowest part of the tube is 35 feet beneath the mean-water level of the river, so that, given a depth of water of 11 feet, there remains a thickness of the same amount between the upper part of the tunnel and the bed of the stream. Steel plates 2 feet 8 inches in length, with their butt joints covered by double-angle steels, are built up to form the lining, and are protected externally from corrosion by a thick layer of cement. In the lower part, or invert, concrete is used to bring the floor of the tunnel up to the track level, below which is laid a longitudinal drain to carry off any water that might accumulate, which will be pumped out as required by electric-power. The piercing of the tunnel was effected by the shield and compressed-air through strata composed of mud and dirty sand of a most unfavorable description, the maximum hydraulic pressure available amounting to 900 tons. The work was commenced in 1895, and it is expected that the tunnel will be opened for traffic next year. — *Westminster Gazette.*

ST. JOHN LATERAN. — The columns of porphyry and granite were so numerous at Rome that they ceased to have any value. At St. John Lateran, that church so famous from the councils of which it was the theatre, there were such a quantity of marble columns that many of them were covered with plaster to be converted into pilasters, so completely had the multitude of riches rendered them indifferent. Some of these columns came from the tomb of Adrian, and bear yet upon their capitals the mark of the geese which saved the Roman people. These columns support the ornaments of Gothic churches, and some rich sculptures in the Arabesque order. The urn of Agrippa has received the ashes of a pope, for the dead themselves have yielded their place to other dead, and the tombs have changed tenants nearly as often as the mansions of the living. In the middle of the place before the church is an obelisk, perhaps the most ancient monument which exists in the world — an obelisk which the barbarian Cambyses respected so much as to stop for its beauty the conflagration of a city; an obelisk for which a king put in pledge the life of his only son. The Romans, in a surprising manner, got it conveyed from the depths of Egypt to Italy; they turned aside the course of the Nile to bring its waters so as to convey it to the sea. Even then that obelisk was covered with hieroglyphics whose secrets have been kept for so many ages, and which still withstand the researches of our most learned scholars. Possibly the Indians, the Egyptians, the antiquity of antiquity, might be revealed to us in these mysterious signs. The wonderful charm of Rome consists, not merely in the beauty of its monuments, but in the interest which they all awaken, and that species of charm increases daily with every fresh study. — *The Architect.*

DUTY OF MASTER TOWARD WORKMEN. — The President of the Hilton Bridge Construction Company, which had a contract to place a skylight over the Senate staircase in the Capitol, at Albany, devised plans for the work which provided for a scaffold to be built upon timbers suspended from the iron girders, placed at an incline over the "well-hole," by iron rods passing through the girders by means of iron straps, which were to be prevented from slipping by iron clamps placed around and bolted to the girder. The foreman of the Construction Company who had charge of the erection of the scaffold deemed the clamps supplied for that purpose unnecessary, and omitted to place them in position. While Timothy A. Hatton, who was a laborer employed by the Construction Company in the erection of the scaffold, was standing on one of the timbers, by direction of the foreman, the strap by which the rod supporting it was fastened to the girder slipped 4 feet, causing Hatton to fall, sustaining severe injuries. In a suit brought by him against the Company for damages for these injuries, evidence was given tending to show that, before he went to work upon the scaffold, all of the rods were in position save one, which he did not see placed, and that it required mechanical knowledge and skill to determine whether clamps were necessary. His complaint was dismissed at the Albany Trial Term, but a reversal and new trial was granted by the Third Appellate Division, which held that the dismissal was an error; that the jury might have found that the defendant's duty to furnish the plaintiff with a safe place in which to work, and with suitable appliances, required it not only to furnish the clamps to the foreman, but to see that they were used, and that the failure of the foreman to use them constituted negligence on the part of the Company. The Court held also that the jury might have found that Hatton, not having the mechanical skill necessary to appreciate the necessity of clamps, had been exposed to a hidden peril which he did not assume. Presiding Justice Parker and Justice Merwin dissented. — *N. Y. Times.*

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OCTOBER 21, 1899.



SUMMARY:—

Current Prices of Building-materials and their probable Continuance.—The recent National Academy of Design Examinations.—Another Assault on the New York Soldiers' and Sailors' Monument Undertaking.—Fall of Columns in the Temple of Karnak.—A Buddhist Temple built by an Englishman.—The International Congress of Methods of Testing Materials.—The Cost of Street-watering and Oil-sprinkling.—An English Critic on New York Architecture.

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Additional: The Courtyard Fronts: "Richmond Court," Beacon St., Boston, Mass.—Entrance to St. Alban's Hall: "Richmond Court," Boston, Mass.—Part of Staircase: Château de Bonnetable.—The High Altar: The Oratory, Birmingham, Eng.—Sandsend Hotel, Sandsend, Eng.—Summer-houses, etc., Scarborough, Eng. 23

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NOTHING is more commonly heard just now among architects and builders than a discussion whether the present high prices of materials will last. In the case of iron, there is reason for the great advance in price which has taken place within the past eight months. Not only had prices of iron previously, owing to distress among the rolling-mills, been abnormally, and sometimes ruinously, low, but the opening of the present year found the conditions of the iron market entirely changed. The great mills, in their competition for the home market, had brought the labor-cost of finished iron, by means of enormous expenditures on improved machinery and plant, to the lowest point ever known. This advantage enabled them, for the first time in the history of the iron-trade, to undersell in Europe the product of European mills. It is true that there is not much direct profit to American mills in exporting iron, but, so long as an outlet for surplus iron, even at the mere cost of production, can be found in Europe, the danger of overstocking the market here is avoided, and just so much iron can be retained at home as, under the protection of the tariff, can be sold at two-and-one-half or three times the price for which the same iron is delivered in Europe. Moreover, the abatement of financial uncertainty brought with it a general prosperity which led to the building of new railways, and it is said that about twenty-four hundred miles of new track have been contracted for within twelve months, all this involving a large demand for rails and bridge materials. As the mills could hardly fill their orders for rails and bridge-plates, they advanced prices for structural iron sufficiently to check the demand, and enable them to devote more of their time and force to the more pressing railway work. Whether similar causes have led to the advance in copper is not so certain. That electrical industries have developed, and that the consumption of copper has increased in proportion, is undoubtedly true, but the facts do not seem to account for the consumption of all the copper which is alleged to have disappeared from the market, and there has been an element of unscrupulous speculation about the copper industry which makes it not improbable that prices may drop as rapidly as they have risen. With other building-materials, the reasons for an advance seem to be chiefly sentimental. We heard recently of a builder who bought, last March, a quantity of sheathing for twenty-three dollars a thousand feet. Not long ago he wanted some more sheathing of the same sort, and went again to the dealer. He found the pile from which he had picked his first lot, in much the same condition as when he had left it. When he inquired the price at the office of the lumber-yard, he was told that, as a special favor, he might have some of the sheathing for thirty-

five dollars a thousand. He declined to purchase at that price, and, so far as we know, the pile is still for sale. In this case, therefore, and probably in many others, the advance is rather theoretical than real. A man who sells as many carloads of lumber a week now as he did last year, and at a price twenty-five per cent higher, may claim that his market has advanced to that extent; but if he sells only half as much at the higher prices, it is fair to assume that these are above the real market, and that sooner or later, they will find their level. That a great deal of projected building has been postponed or abandoned this year because of the high prices of materials every architect knows, and it is becoming a serious question whether the next season will see a further postponement.

THE National Academy of Design, in New York, has given another sign of renewed vitality in an unexpected strictness in the examinations for admission to its classes. Hitherto, applicants have been only required to present a drawing from the antique, and if this was reasonably satisfactory, the candidate was admitted. Now, as no tuition-fees are required in the antique class, and the number of candidates has, in consequence, greatly increased, the committee in charge have thought the time favorable, not only for raising very materially the standard of admission, but for making sure that the drawings offered are really the work of the persons offering them, and candidates are now required to make their trial drawings at the Academy itself, which is open for the purpose during the first week in October, November and February. At the October examination only sixty-six out of two hundred applicants were accepted, many former pupils having been rejected, and it is not surprising that a certain amount of discontent has been aroused. However, the candidates who feel themselves capable of better things can try again without very serious delay, and those who are incapable of doing anything better should congratulate themselves on having this fact plainly indicated to them, so that they can arrange for adorning some other profession than that of art.

THE last, we hope, of the attempts to interfere with the award in the competition for the New York Soldiers' and Sailors' Monument was made a few days ago, by the publication of a letter from a sculptor, claiming that the design for the monument which has been adopted for its new situation is "a reproduction or adaptation of the Temple of Vesta at Tivoli," and calling upon the recipient of the letter to use his influence "to prevent this superfluous commemoration of Vesta, virtuous and admirable as that defunct heathen divinity doubtless was, and forestall a foolish dissipation of the city's money and self-respect." In regard to the city's self-respect, we might observe that nothing would do more to recover some of that sentiment, which has been "dissipated" in scores of cruel and wanton swindles perpetrated on deserving artists within the past twenty years, than, for once, to have the city's representatives keep honestly and loyally to a contract made in regard to an artistic matter, without regard to heathen divinities, defunct or otherwise. As a matter of fact, the new monument does not bear any resemblance to the Temple of Vesta at Tivoli, beyond the circumstance that it is circular in plan, and is ornamented with columns, characteristics which it shares with scores of other monuments, antique and modern.

THE most important piece of archaeological news of the week is that mentioning the fall of nine columns in the great temple at Karnak, in Egypt. The group of Theban temples, of which that known as the Temple of Karnak is the largest and most complete, has long been undergoing exploration, and it is quite possible that the excavations which have brought to light statues and inscriptions have also contributed to the ruin of the building in which they were contained. Although the columns themselves are of granite, they stand on plinths of sandstone, which has been gradually disintegrated by the action of the atmosphere, and of the Nile floods, during the three or four thousand years which have elapsed since they were set in place, so that, when exposed by digging around them, they are in condition to give way under the weight of the superstructure, and an accident of this kind seems to have been the cause of the catastrophe.

ONE advantage of an imperial policy, carried out in the English fashion, is that it gives English professional men a chance to enjoy, occasionally, some novel sensations. It must be, for example, interesting to build as Mr. Donnan, of Mandalay, did recently, a Buddhist temple, for a Board of Burmese Trustees, with the help of native workmen. Some years ago, in the reign of the good King Theebaw, who kept rubies and emeralds in barrels in his palace, and slaughtered his subjects in droves, the wooden pagoda which sheltered the colossal statue of Buddha at Mandalay was burned. The statue itself, although so heated that streams of melted gold ran from its surface, was saved, through the heroism of the townspeople and the palace officials. Soon after this, the English, who had long disapproved of King Theebaw's conduct, became unable to endure further his infractions of the Golden Rule, and made a descent upon him, killed a large number of his subjects, stole his rubies and emeralds, and, incidentally, annexed his kingdom to their Indian possessions. Under British rule the city of Mandalay prospered, and the pious inhabitants found themselves at last in condition to provide their miraculous statue, which, according to their legends, had received from the breath of Buddha himself the power of walking and talking, with a new shelter. After a long discussion it was decided, on the advice of English engineers, to construct the new temple of masonry, and Mr. Hoyne Fox, a professional architect, and Government Engineer at Rangoon, prepared a design, which was approved, and carried out under the supervision of Mr. Donnan, an engineer of Mandalay. The design, in the traditional Burmese style, was cleverly rendered in masonry by Mr. Fox, and carried out, apparently, with great skill, the stagings being erected over the head of the statue, which it would, of course, have been sacrilegious to disturb. This circumstance caused for a time a little embarrassment. The barefooted native workmen found that the lime mortar burned their feet, as they walked over the masonry, and put on slippers to protect themselves. Some priests noticed this, and denounced the disrespect to the god involved in wearing shoes over his head. The Trustees wished to avoid the possibility of stirring up any miraculous resentment, and requested that no slippers should be worn on the work. The masons, however, would not expose their feet to the lime, and as no one could be found to take their places, the building operations, after being suspended for some three weeks, were quietly resumed with the old masons, slippers and all, and neither Buddha nor his priests made any further objection. As the building approached completion, astrologers were consulted in regard to the selection of an auspicious day for the raising of the final, which, in building pagodas, is celebrated by a public festival. In this case, the final consisted of seven heavy rings, surmounted by a ball, and the festival continued for eight days, one ring being set each day for a week, the fixing of the ball, accompanied by a salute of fifteen guns, marking the final day. Mr. Donnan says, in the *Indian Engineer*, that he had read in the Burmese records accounts of ceremonies in connection with the opening of various works of public utility, and the accounts had always mentioned that, during the ceremony, an earthquake was felt, produced by the "nats," or good spirits of the heavens, in token of their approval. Remembering this, he observed to some of the native spectators, in the course of the festivities, that, in order to have the celebration complete, there should be an earthquake, to show the approval of the "nats." The morning after making this remark, a shock of earthquake was distinctly felt, showing that the nats like to see English engineers building heathen temples.

THE first announcement that has reached us of the International Congresses which are to be held in connection with the Paris Exposition of next year gives information in regard to the Congress of Methods of Testing Materials of Construction. Many of our readers will, no doubt, be interested in this Congress, the management of which is in most distinguished hands. Among the members of the Committee of Organization are M. Candlot, whose reputation as an expert in the testing of materials is world-wide; Professor Bodin, of the *École Centrale des Arts et Manufactures*; General Gras, permanent inspector of artillery manufacture; General Borius, President of the military committee on engineering science; M. Polonceau, former President of the Society of Civil Engineers, and many others of equal note in the scientific world. The sittings of the Congress will occupy a week, from the ninth to the sixteenth of July. The foreign participants in

the Congress will be divided into three classes, one consisting of a "committee of patronage," the members of which, as well as a certain number of honorary Presidents, are chosen by the local Committee of Organization from among persons in other countries known to them by reputation, while the second includes persons, or societies, who are acceptable to the managing committee, and who pay, as "membres donateurs," a contribution of not less than fifty francs; and the third includes the "membres adhérents," who pay only twenty-five francs. All members, of every class, receive gratuitously the publications issued by the Congress, and may procure, for ten francs, tickets entitling members of their family to be present at the meetings of the Congress. The Committee will endeavor to secure reduced rates for members of the Congress on the French railways, and it is hoped that similar concessions may be made by other Continental roads. In the course of the Congress, and after its close, it is intended to arrange entertainments and visits, particulars of which will be given later. The Committee earnestly desire to know as soon as possible how many persons are likely to attend the meetings and entertainments of the Congress, so that comfortable provision may be made for them, and request those who hope to be present to send early notice of their intention, it being understood that this notice does not bind them in any way, but is asked for simply to guide the Committee in their plans.

IT is much to be wished, in the interest of taxpayers, that our Eastern cities would investigate the method of keeping down street-dust by sprinkling with petroleum, which is so much in favor in California, and has been found so successful on the principal railways throughout the country. At present, in the East, the streets are sprinkled with water, and the cost charged to the owners of abutting property, upon whom it bears very heavily. We have before us a Boston tax-bill of the present year, charged upon a small estate, with one hundred and eighty feet frontage, on two macadamized streets, of moderate width, on which there is very little traffic, in which the street-watering item alone is more than fifty-one dollars. Counting both sides of the street, this is at the rate of three thousand dollars per mile per annum for sprinkling with water, while the experience of California shows that when once saturated with petroleum, they will be free from dust for many years without further care.

THE sprinkled part of the California roads is sixteen feet wide, and the cost is two hundred dollars a mile. The sprinkled part of the streets in Boston would probably be twenty-four feet wide, which, in the same proportion, would cost three hundred dollars a mile, or one-tenth as much, for an application which would prevent dust for several years at least, as the house-owners of Boston are obliged to pay every year for watering under the present system.

THE editor of the *Builder* has, apparently, taken a vacation-trip to New York, and is pleased with the city, which, as he says, represents a successful endeavor to unite utility and beauty. Even the high buildings in the lower part of the city, which afflict so severely most of the native critics, seem to him a frank and successful device for making the most out of the restricted space in the business portion of the island. A walk through lower Broadway on a breezy day in March would suggest reasons why high buildings have inconveniences for the public, if not for their owners and tenants, and it is safe to say that, even in New York, very few more of them will be built. Apart from the enterprise and originality shown in the "skyscraper" office-buildings, he finds, however, a great deal of artistic interest in other portions of the city. The Riverside Park, which he calls, with justice, "one of the finest residential sites which can be found on either side of the Atlantic," is lined with dwellings in a great variety of styles, ranging from Moorish to Greek, and even this jumble he finds more interesting than the monotony of English or Continental streets. What it might be without the restraint of educated taste it is hardly possible to guess, but, as he says, "the educated American sets a higher value on art than does the average Englishman, or, indeed, a citizen of any other country except France." Such an expression as this from an authority so competent is as surprising as it is gratifying, and it is even pleasanter to be told, as we are in the next sentence, that "there can be no doubt that it is beyond the Atlantic that we shall find the finest buildings of the future."

THE SAFETY OF THEATRE AUDIENCES.¹—I.

AMONG the main objects of the British Fire Prevention Committee, as stated in the By-laws, I find the following, viz,
 "To direct attention to the urgent need for increased protection of life and property from fire by the adoption of preventive measures, and

"To use its influences in every direction towards minimizing the possibilities and dangers of fire."

Having been invited by the Chairman of the Executive Council to prepare a paper for the publications of the Committee, I propose to discuss briefly the question of personal safety in theatres. I am well aware of the fact that the ground has been gone over so thoroughly by competent writers as to leave hardly a possibility of making any new or promising suggestions, yet I hold that some good must come from agitating the question over and over again. It is a matter of common observation that when a serious fire disaster has occurred, whether in a hotel, an asylum, a dwelling, or a theatre, the press for awhile takes up the subject and discusses means and remedies, while the thoroughly alarmed and frightened public stays away from those theatres or hotels the reputation of which from a safety point-of-view is doubtful. It is, unfortunately, the rule, however, that as soon as the first excitement subsides, the general interest ceases and after a very short interval, things begin to go again the same way as before, and safety measures or precautions against the well-known dangers to life and limb in such structures are either neglected or forgotten.

In this question history truly repeats itself, and, to quote but a few instances, let me recall the numerous suggestions for theatre reform, the flood of plans, pamphlets, newspaper articles and the revisions of theatre ordinances, etc., which came forth immediately after the calamity of the Ring Theatre fire in Vienna, in December, 1881, or the sentiment in favor of better means of safety which was aroused by the theatre fire at Exeter in September, 1887, in England; or the intense public excitement following the deplorable disaster of the Paris Charity Bazaar fire, in May, 1897; or finally, the horrors of the recent catastrophe of the burning of the Windsor Hotel in New York, which occurred in the afternoon of St. Patrick's Day, March 17, 1899, and caused the loss of many lives. In every instance mentioned, and these instances might be multiplied indefinitely, the public excitement which followed the casualty did not last more than a few weeks.

Now I hold that the subject is too important to be dismissed so soon from our thoughts. The interest in this grave question should, on the contrary, be kept up and maintained, and measures of safety agitated until all dangerous public buildings are either made perfectly safe or are closed up. Owners or managers of theatres, in particular, must be given to understand that their highest duty toward the public lies, not in giving them attractive performances, but in providing absolute safety to the public while assembled in their buildings.

To begin with, let me state that I shall confine my remarks to a consideration of safety measures for the theatre-goers and the performers and stage-hands. I shall leave out of consideration the question of the safety of the building—in other words, the subject of protection of property from fire—except in so far as the safety of the building incidentally helps to increase the safety of the people assembled during a performance, on both sides of the curtain. The safe construction of the building and measures tending to reduce the immense losses due to the destruction of such buildings by fire are, no doubt, desirable, but compared with the problem of how to avoid the terrible loss of life due to theatre-fire calamities, they are of secondary importance. Besides, the matter of safe construction has been well and thoroughly discussed in numerous excellent treatises, of which I would only mention the recent standard work by Mr. Edwin O. Sachs, "*Modern Theatres and Opera-houses.*" Another reason why stress will not be laid upon fire-resisting construction, and which will be brought out in what follows, is that incombustible or fireproof construction, *per se*, cannot and does not absolutely prevent theatre-fire disasters. For instance, an ill-planned theatre, having its exits badly arranged, or insufficient in number, may, in case of a real or false alarm of fire, prove a veritable death-trap, though its construction may be thoroughly fireproof; and *vice versa*, a theatre which is combustible, which has wooden staircases, and which lacks fire-extinguishing appliances, may yet be so planned and arranged as to afford the public perfect means for quick escape from smoke and fire, and, therefore, be the safer of the two. This instance indicates clearly that there are other safety measures of much more importance than fire-resisting construction.

A study of the principal causes of theatre-fires and panics, and of the dangers which arise in such cases, should form the basis of the subject of prevention. It also offers the best clues for the essential requirements to be insisted on for the protection of theatre-goers and performers.

According to the carefully-compiled statistics of Mr. Foelsch and Mr. Sachs, 207 fires out of a total of 401 of which the cause could definitely be ascertained, or somewhat over fifty per cent, had their origin either on the stage or near the stage in the stage part of the building. The causes of these fires were defects in the gas-installation:

unprotected gas-lights, careless or defective arrangement for the lighting up of the gas, defects in the heating-apparatus, fireworks, lamps, explosions, the firing of guns and defects in the electric-light installation. Therefore, the stage in a theatre is the point where the majority of fires break out, and the stage-construction, the scenic-apparatus and its lighting require above all to be improved and made safe, if theatre-fires are to be reduced in frequency.

When Mr. Foelsch's first paper on "*Theatre Fires*" was published in 1870, he had collected statistics of 130 fires; when his book came out in 1878, it contained a record of 523 fires; the appendix to his book, issued in 1882, increased this number to 631, and in his last essay on theatre fires published in 1889, he enumerated 936 fires. Mr. Edwin O. Sachs, who continued the work of Mr. Foelsch, published in 1897 a list of 1,115 theatre-fires (up to May, 1897).

In his last book, "*Reminiscences from the Life of a Civil Engineer*," Mr. Foelsch gave the following statistics, in intervals of six years:—

From 1841-1846 occurred	32 theatre-fires.
" 1847-1852 "	41 "
" 1853-1858 "	40 "
" 1859-1864 "	41 "
" 1865-1870 "	82 "
" 1871-1876 "	96 "
" 1877-1882 "	161 "
" 1883-1888 "	215 "

The point brought out by these statistics is that the average number of theatre-fires per year is on the increase. This agrees with the deductions from statistics as given by Mr. Sachs. While the average annual number of fires in the last 30 years is 27, the average of the last 20 years is 33, and that of the last 10 years is 36. This may be partly due to the increasing number of theatres erected, and partly, possibly, to the fact that the statistics of the last decade are more accurately kept. Still, one would hardly expect such a startling result in view of the numerous really valuable suggestions made from time to time regarding improvements for the safety of theatres.

Occasionally, one finds the subject divided into measures of safety to be applied to *old* buildings, and those that should be carried out in *new* buildings. From my point-of-view, this division is unimportant, except in so far as the older buildings are naturally more dangerous, and likewise more difficult to improve, than theatres of more recent construction, which, as a rule, are better planned, better constructed and better equipped and maintained. On the whole, the principal measures of safety apply to both classes of buildings, and they can be carried out, with only few exceptions, whether the building is old or new. Of course, those who wish to avoid risks always go safer by shunning the older buildings and patronizing only the recently-built theatres, at least in the larger cities, where special theatre-ordinances are enacted. For instance, a very little reflection ought to teach theatre-goers that theatres in which the electric-light is installed, particularly on the stage, are less dangerous than those still provided with gas-illumination, or that theatres necessarily located in a block are much safer if there are large courts on each of their sides, giving numerous means of egress to the open air in case of an alarm or panic.

In my paper I shall have in view constantly the dangers from fires or panics breaking out *during* a performance. Statistics show that during the last 100 years (1797-1897), at least 9,355 persons lost their lives in theatre-fires. This loss of life seems so appallingly large as to certainly make it worth while to make continued attempts to minimize the dangers to which people crowded together in a theatre during a performance are exposed. Mr. Sachs, in his work on "*Fires and Public Entertainments*," which forms a continuation of the statistical figures gathered with so much diligence and labor by the late engineer Aug. Foelsch, informs us that out of 769 theatre-fires, 103, or about 13.5 per cent, broke out *during* the presence of the audience. These figures certainly point out the graveness of the dangers to theatre-audiences and stage-personnel. Dr. Brouardel, in an interesting article on "*La mort dans les théâtres*," explains wherein these dangers chiefly consist. He tells us that loss of life in theatre-fires or panics is due to burns by the fire and the flames; by suffocation, due to the heat, the smoke or fire-gases, by shock or fright, and by the crush or jam of the panic, in which people are trampled to death, or have their chests crushed in and die from hemorrhages, etc.

It follows that in the case of a fire or panic the chief and essential conditions for the safety of the human beings are, first, *fresh air*, to prevent suffocation by smoke and gases, and exhaustion by the heat of the flames; second, *light*, for darkness leads to confusion, frantic struggles and crushes, and, third, *plenty of unobstructed exits* leading to out-doors, for the lack of proper exits and obstructions in passages, or on stairs, leads to jams and causes many violent deaths.

In considering the principal measures of safety for spectators, players and stage-hands, I shall not, in this paper, follow the usual course of describing and discussing the various parts of theatre-buildings, their planning, construction, arrangement and equipment, but I shall consider the safety measures as nearly as possible in what appears to me to be their relative order of importance. Fire-protection in theatres includes the following safety measures, viz:—

1. Means to permit the audience and the stage personnel to make their escape safely in case of either fire or panic.
2. Measures tending to prevent an outbreak of fire, and for quickly detecting and signalling a fire outbreak.

¹ A paper by Wm. Paul Gerhard, Civil Engineer, Consulting Engineer for Sanitary Works, Corresponding Member American Institute of Architects, Honorable Corresponding Member British Fire Prevention Committee, etc. Reprinted from the publications of the British Fire Prevention Committee. Copyrighted in the U. S. by the author, 1899.

3. Measures for protecting the play-goers against fire and smoke.
4. Means for the protection of the stage personnel.
5. Measures for confining a fire to the stage and preventing its spreading.
6. Means for saving life.
7. Means for fighting fires in their incipency.
8. Measures to guard against a panic.

1. MEANS TO PERMIT THE AUDIENCE AND THE STAGE PERSONNEL TO ESCAPE IN CASE OF FIRE OR PANIC.

Under this heading will be considered the question of theatre-exits which safety measure I place at the head of the list, because it is by far the most important measure. In this, all leading authorities are agreed. The safety of the persons assembled in a theatre-building depends more upon properly-arranged means of egress than upon fire-resisting construction, or upon the provision of suitable fire-appliances.

Experience teaches that a theatre-fire may become fatal to life within five minutes after the discovery of the fire. What must be done, therefore, in every such building, whether old or new, is to provide such means of egress as will insure the emptying of the entire house within three or four minutes. Rightly carried out, this safety measure is entirely sufficient to save the lives of all people, spectators, as well as performers, even when all other precautions, be they ever so good, are neglected.

But there is still another reason why the question of theatre-exits is *all important*. Frequently false alarms of fire occur in a theatre, or a small stage-fire is put out in its incipency, yet sudden terror may seize the audience, and though their lives are threatened by neither flames nor smoke, they become panic-stricken and a wild stampede towards the exits occurs. In such a case, the safety of the audience from the danger of being trampled to death, or crushed in the jam, depends entirely upon a provision of proper and sufficient exits to afford a possibility of quickly reaching the open air.

Under "exits" should be understood much more than merely the exits proper. We must include under this term the arrangement and dimensions of the seats, the width of the passages between the seats, the number of seats between aisles, the width and number of aisles, the size of the gangways in the rear of the seats in the auditorium, the arrangement of vestibules, foyers and lobbies; the dimensions, planning and construction of staircases, the fire-escapes and balconies, the arrangement and width of exit-doors, the door-bolts, and the lighting of the exits. In other words, the term "exit" includes the entire road which a spectator seated in the audience has to travel in order to reach the open air.

In Publication No. 4 of the British Fire Prevention Committee, "*Theatre Exits*," the subject has been admirably treated by Mr. Alfred Darbyshire, and Mr. Thos. Blashill has referred to the same subject in his paper on "*Lessons from Fire and Panic*." Mr. Sachs has, perhaps, struck the key-note in the following most important advice, which theatre-owners and managers would do well to take to heart: "Everything to insure good exits should be done, even if some of the other requirements of modern theatre-construction have to be given a second place. As far as the audience is concerned, suitable exits and straightforward planning should be given precedence." Equally true is the statement of Mr. Darbyshire: "Construction may minimize the risk of a fire-outbreak, equipment may prevent the spread of fire, but clear exits and good planning will principally contribute to the safety of an audience."

The problem of how to secure the quick and safe departure of a theatre-audience is largely a question of its proper and sufficient subdivision. While this is, to some extent, secured *a priori* by the division into different tiers, this in itself would not be sufficient, particularly if exits from different tiers are made to lead into a common lobby. Each section should be again divided and made to leave by several independent outlets. In other words, the audience in the parquet, balcony and gallery should each be decentralized as much as possible. The exit-passages from different sections should, under no circumstance whatever, cross each other, meet, or be combined; each subdivision should have at least two entirely separate and independent exits leading to the open air; in large buildings a greater number even may be required. The spectators occupying gallery-seats have the farthest to travel, and should, therefore, have the best facilities for exits, whereas, actually the reverse is often the case.

It is not at all necessary that all the exits provided in a theatre should be used as entrances before the performance begins; but it is essential that all exits should be used nightly, *after* the performance, so as to familiarize the public with the different routes of travel. Nothing, to my mind, is worse in a theatre than the provision of so-called *emergency* exits, which are supposed to be used only in case of threatening danger.

The number of exits will depend upon the number of tiers and the size of the theatre; the number of tiers should be limited, and the gallery should not be located too high above the street-level, nor should the main auditorium ever be located a story above the street-floor. In general, smaller theatres may be considered safer than larger houses. The arrangement of a sunk pit, so common in English theatres, is unknown both in the United States and in Continental theatres. The pit arrangement is good in so far as it reduces the height of the upper gallery above the street-level and thereby shortens the exit from the most dangerous part of a theatre. In the

United States building regulations call for the principal floor of the theatre to be not more than a few steps above the sidewalk.

The arrangement and placing of the exits will depend upon the plan of the theatre and this, in turn, is determined by the available site. Clear planning is most desirable, so that in the event of danger the audience may clearly see their way out; as a rule, a symmetrical arrangement of both sides of each tier will conduce to the quicker emptying of the theatre.

It would be well to institute actual tests of the time required to empty a theatre-building. According to Foelsch, a theatre in Milan, Italy, having thirteen exits opened, was emptied in June, 1887, in less than 4 minutes (the size or capacity of the house is not stated). I am informed by a person who has frequently visited the Wagner performances that the Bayreuth Theatre, having a capacity of 1,500 persons, can be emptied in just 2 minutes. The Fifth-Avenue Theatre in New York (holding 1,400 persons) can be emptied in 2½ minutes, the larger Gaiety Theatre in Boston (3,000 persons) in 4 minutes; the recent Abbey Theatre in New York (1,450 persons) in 1½ minutes. The large Madison Square Garden in New York, which holds 17,000 people, requires 4½ minutes for emptying. All these are examples of more recent buildings.

The minimum width of an exit and exit-door for 500 persons or less should be 5 feet, and for every additional 100 persons, 20 inches should be added to the width.

Regarding the arrangement of the exit-doors, it is of the greatest importance that these should swing outward, for many a disastrous panic and loss of life were caused by doors which opened the wrong way, and which could not be opened during a jam because the mad-dened crowd was pressing against them in their frantic efforts to reach the exits. It is not sufficient that doors should open outward, but they should swing entirely out of the way in order not to form, when opened, an obstruction in a passageway or staircase.

All exit-doors should be plainly designated as such in large legible letters; all other doors may be either marked "No exit" or should have the name of the room into which they open marked, such as "cloak-room," "toilet-room."

Doors of exit leading to staircases should never open directly upon the stairs, but there should always be a wide landing between the doors and the stairs. Under no circumstances should doors with lock and key be tolerated in a theatre; exit-doors may be provided with bolts placed on the inside and at shoulder-height, and of such construction as to be easily drawn or pushed back. Several so-called panic-bolts are now obtainable which fulfill the requirements of safety. In the Abbey Theatre of New York City the exit-doors are controlled by electric openers, which are operated by pressing a button, either from the stage or from the manager's office. The device is, perhaps, not new, for it was proposed in 1882 by a clergyman, Don Ravaglia, and tried with success at the Allighieri Theatre, in Ravenna, Italy.

Regarding the staircases in a theatre, these should be wide and easy; they should never have any winding steps, nor should there be single steps. Very long stairs should be broken by wide landings. All risers and treads should be uniform, to prevent stumbling. Stairs should be at least 4 feet 6 inches wide, and if possible they should be made wider than the width of the corridors leading to them. A strong and well-fastened hand-rail should be provided at both sides of the staircase, and very wide stairs should be divided in the centre by a centre-rail. No obstructions of any kind should be permitted in staircases of theatres. Concerning construction, it is desirable, though by no means absolutely necessary, that the stairs should be fireproof or incombustible. Ill-planned fireproof-stairs may not prove to be as safe as well-arranged wooden stairs. Iron stairs with slate-treads are better than stone stairs. Stairs enclosed on both sides with brick walls are better and safer than open-well stairs. It is essential that stairs leading to the exit should be smoke-proof.

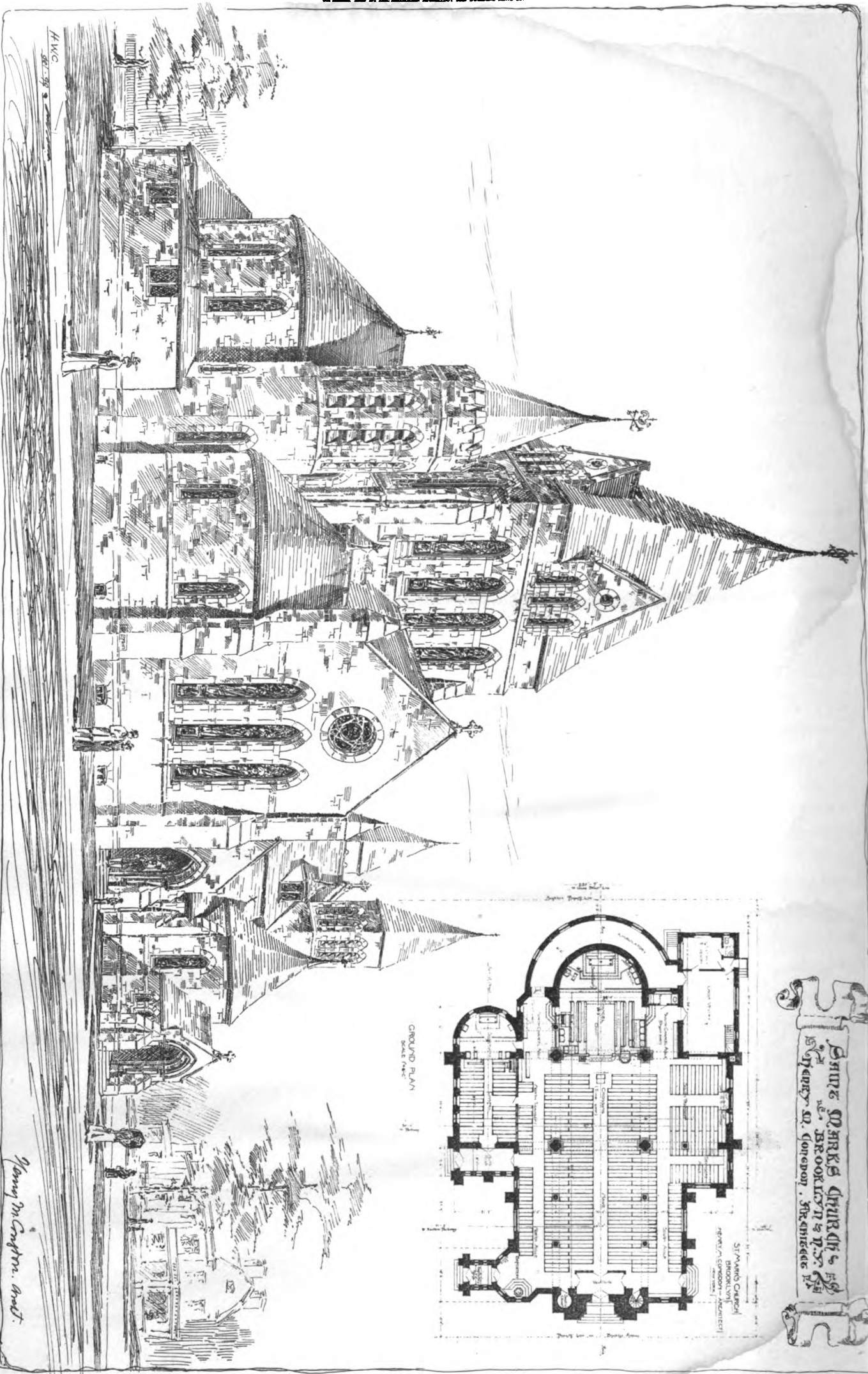
All corridors, halls and passages should be planned of ample width to accommodate the number of people passing through them. They should be not less than 3½ feet wide for 200 persons, and for every additional 100 persons 6 inches in width should be added.

The aisles in the auditorium should be of proper width, and sufficient in number, as this will assist greatly in the quick emptying of the house. The minimum width of aisles should be 3 feet, and it is desirable that the width of the aisles should increase toward the exits. Aisles should never have steps, but must be planned with gradients or inclines. All passages and aisles should be kept free and unencumbered; no extra chairs, camp-stools, or other temporary obstructions should ever be permitted. There should be a sufficient number of aisles between the seats, so that persons in leaving may quickly reach the aisle. Most theatre-regulations prescribe that there should be no more than 12 seats between aisles. The dimensions of the seats should be generous, not only for comfort's, but principally for safety's sake. The seats should be from 18 to 21 inches wide, and the distances between the rows of seats should be from 29 to 31 inches, (generous dimensions are 20 inches wide and 33 inches deep). All seats should be well fastened, for loose chairs might become, in times of panic, a dangerous obstruction by accidental overturning. The seats should be the so-called flap-seats, hinged so that they may be turned up out of the way, thus affording more room between the rows for people passing between them.

The gangways or passages at the rear of the auditorium seats and all foyers, vestibules, lobbies, colonnades or terraces reached by the play-goers from the aisles should be generous in size and of capacity

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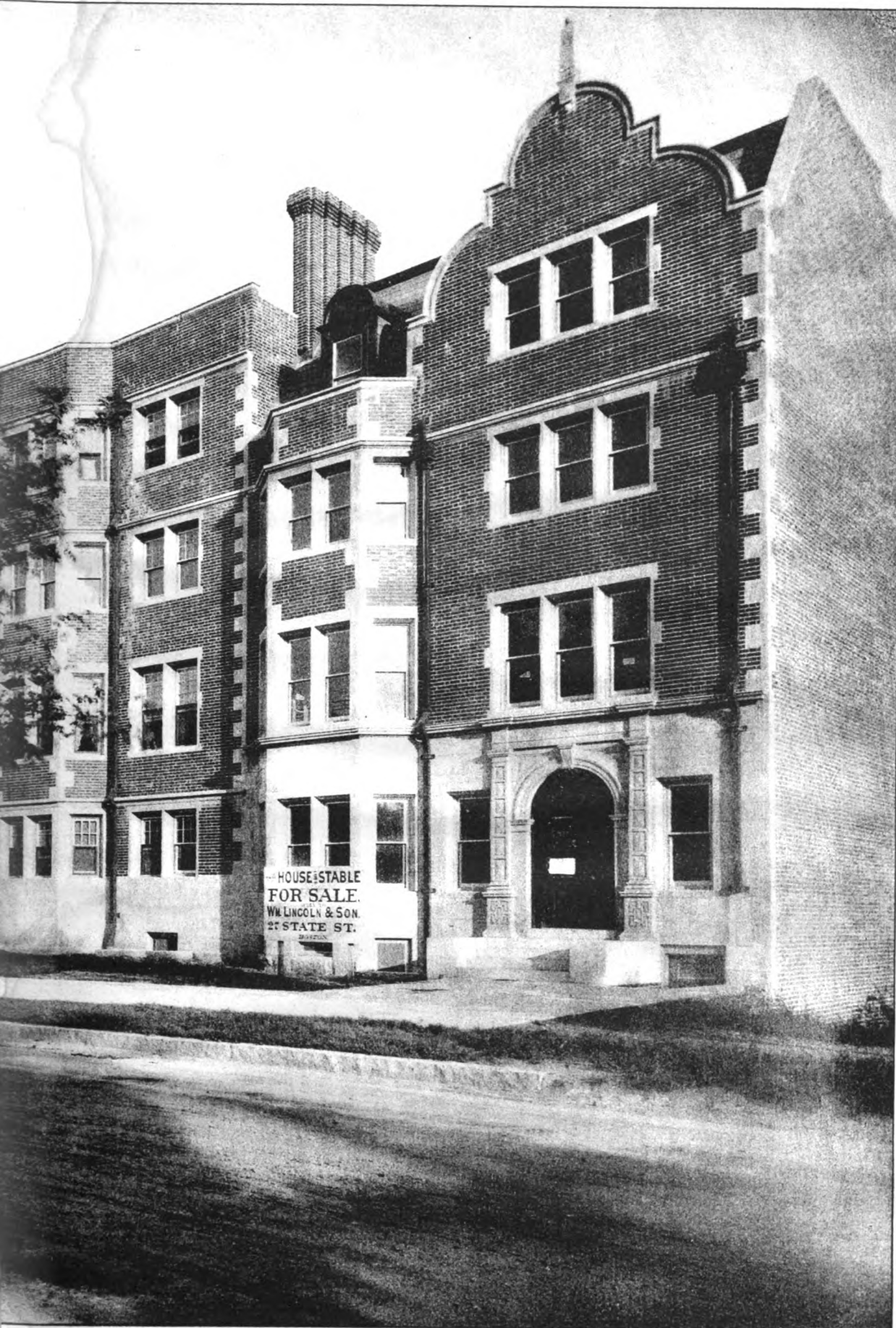
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RICHMOND COURT APARTMENT
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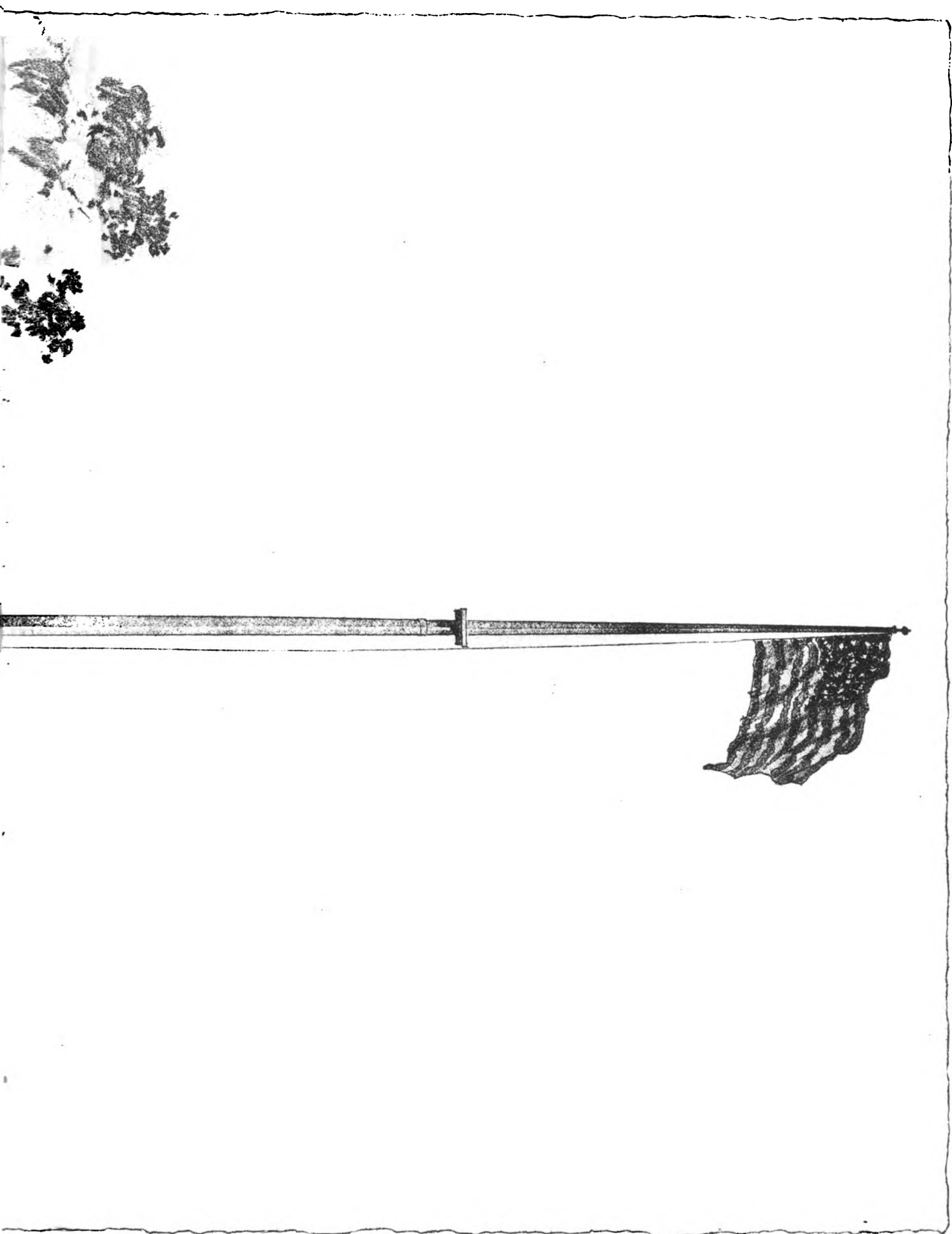
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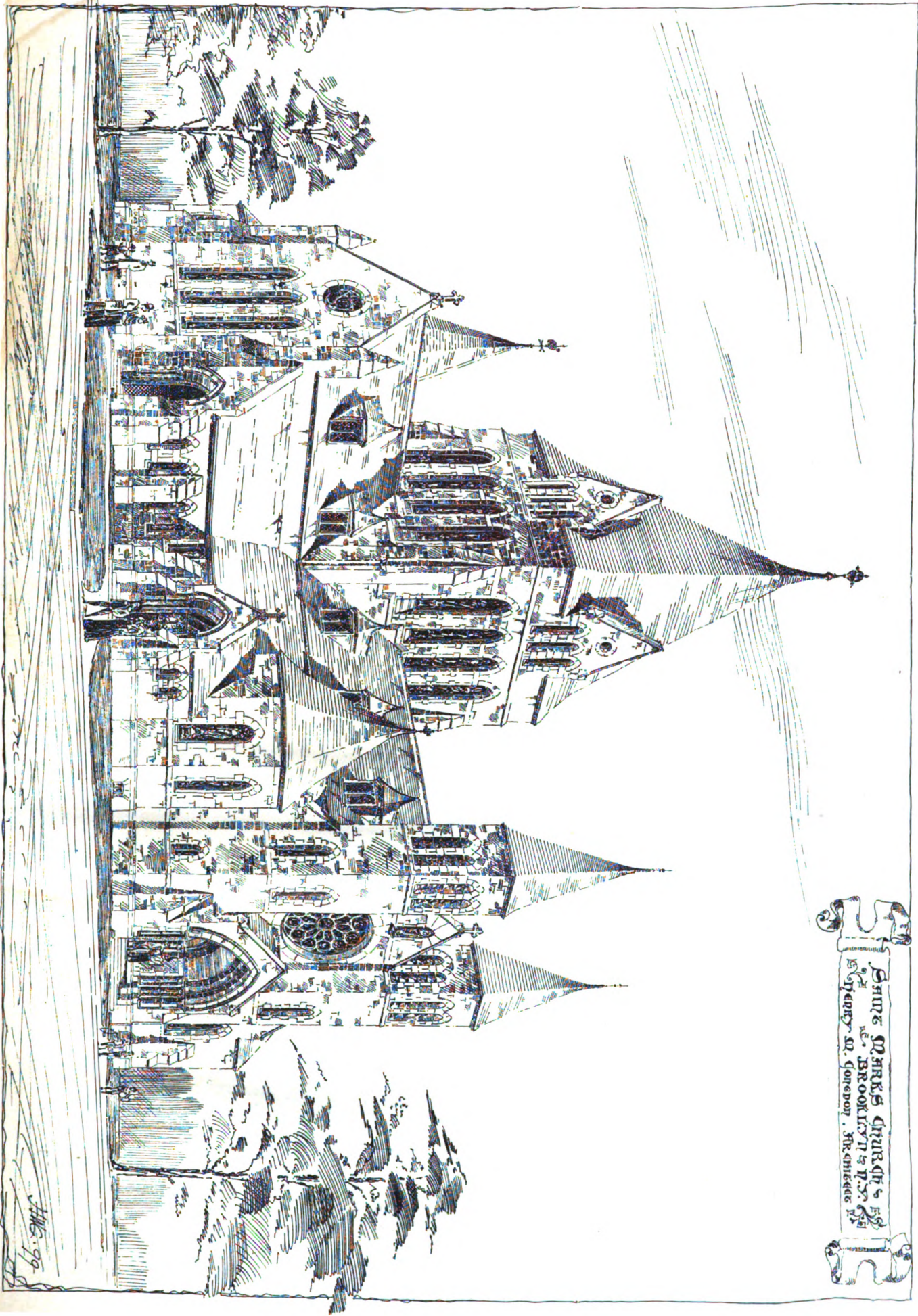
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ST. MARK'S CHURCH, BROOKLYN.
VIEW FROM NORTHWEST.

Wm. 99

to hold the entire number of persons of each tier. They must be well-ventilated and be free from any smoke. Each tier must, in addition to the regular exit-ways, be provided with external iron safety-balconies and iron fire-escapes, leading to open courts in those theatres which have only one front on the street. These fire-escapes should be constructed so that they can be well and conveniently used by women, children and infirm old persons generally. It is very necessary that the fire-balconies and stairs be covered or roofed over, so that they may not become slippery and dangerous in freezing weather. It is also important that these fire-balconies and stairs be kept at all times entirely free and unobstructed.

Given plenty of exits through which a crowd may safely escape in case of fire or panic, it is necessary that all exits, passages and corridors and stairs, including, as I believe, the rear portion of the auditorium, be lighted by some lighting-system which is entirely independent of the lighting-system of the stage or the main auditorium. Where gas or electric light is used in the theatre, it is usually required that the exits be lit by vegetable-oil lamps or candles, but either of these should be well protected from draughts. If gas-lights are used, they should be supplied from an entirely separate gas service, and the gas-lights should be controlled by gas-keys with detachable keys, in order to prevent mischievous persons from tampering with lights which are so absolutely essential to the safe retreat of an audience.

The safety measures named will secure the safe escape of the play-goers from a theatre in case of a false or real alarm of fire. Equally necessary are the means for the safe escape of the theatre personnel, comprising the performers, musicians, dancers, stage-hands, etc. In some performances there are sometimes as many as three or four hundred people behind the curtain, and their safety is of as much importance as that of the theatre audience. The stage-house, therefore, requires several properly arranged and located exits, leading directly to outdoors and preferably located on the two opposite sides of the stage. There should be wide passages around the three sides of the stage, divided from it by fire-walls. There must also be well-arranged, strongly-built stairs from the dressing-rooms of the actors leading to the exits, and these stairs should in every respect be as safe as those for the audience; they must be smoke-proof and kept well lighted until the emptying of the stage-house. The dressing-rooms should not be located too high above the stage, nor up near the rigging-loft, from whence escape is more difficult.

For the stage-hands there must be at least two fireproof-stairs leading from the flies and the rigging-loft down to the stage.

2. MEASURES TENDING TO PREVENT AN OUTBREAK, AND FOR QUICKLY DETECTING AND SIGNALLING A FIRE.

We have seen, in the foregoing remarks, how very necessary it is, in case of a fire breaking out in a theatre-building during a performance, to get the people out of the building as quickly as possible, and in such a manner as to prevent any panic, jam or stampede.

We must now consider briefly some of the general measures which will tend to prevent an outbreak of fire. These measures comprise chiefly four points of consideration, namely, the site and plan of the building, the construction and equipment, the managing and watching, and, finally, the theatre inspections.

Regarding the site for a theatre, a free site is, of course, the ideal one. In some Continental cities this is insisted upon, but in both England and the United States of America a free and isolated site is very exceptional. Most American theatres have only one street front, and until quite recently many such buildings were badly hemmed-in on the sides, so that it was almost a matter of impossibility to provide a suitable number of safety exits. In recent theatre-buildings located in the middle of a city block, a compromise has been effected by making provision for wide courts on both sides of the front. Some of the stage-exits and the outside fire-stairs lead into these courts, which must have a certain minimum width, depending upon the number of persons which the theatre holds.

In choosing the site for a theatre, due regard should always be had to the neighborhood and the surroundings. A theatre should never be located near dangerous trade establishments, large factories, etc. Danger of fire from without should be guarded against as much as fire from within. The location of a theatre in rear courts, with entrances passing through front buildings devoted to other purposes, is one that is universally considered out of the question.

The general arrangement of the plan should be as clear and symmetrical as possible, as this increases the safety. The number of tiers should be as small as possible, and never more than three tiers above the parquet. The subdivisions comprise the parts devoted to the public, such as the entrances, stairs, vestibules, foyers, and the auditorium; and, on the other hand, the parts devoted to the players, viz., the stage, the dressing-rooms, the manager's offices, the property-room, the scene-dock, the engine and boiler room, etc. It is well to eliminate from a theatre-building in the front part of the house all stores, living-apartments, restaurants provided with kitchens, etc., and from the stage part of the building the scene-dock, the painters' and carpenters' shop, the steam-boilers, the gas-meter vaults, the property and costume rooms; in short, all rooms for storage of a considerable amount of inflammable materials, etc.

It is not my purpose in this paper to discuss theatre-construction, except to indicate in a general way that, as the safety of a building

has a direct bearing upon the safety of the people in the theatre, all walls should be well-built, solid fire-walls, and that there should be as many subdivisions as practicable, each made as fire-resisting as possible, and divided from the adjoining division by properly-constructed fire-walls. Besides, the theatre should have a fireproof roof, to guard against danger of a conflagration from the outside, and all chimneys and smoke-flues should be built in the very best manner possible.

As explained heretofore, the stage of a theatre is the chief danger-point, hence particular care is necessary to make it as fire-resisting as possible. The stage is the place where a vast quantity of very inflammable material, such as woodwork, canvas, paper, ropes, is concentrated. The scenic decorations are naturally subjected to a constant drying-up process by the great heat to which they are nightly exposed. They are always to be considered as being in danger of fire from their exposure and closeness to open lights, wherever gas-light is still used, and they are apt to catch fire very quickly. It is self-evident, therefore, that the stage should be made much safer than it is found to be in the majority of theatres, by eliminating from it combustible material so far as practicable. The central part of the stage must necessarily remain a wooden construction, owing to the requirements of the numerous stage-traps, but the two sides of the stage, the so-called wings, the fly-galleries, and, finally, the gridiron and the stage-roof can, and should, be constructed of fire-resisting material. Moreover, all scenic decorations can be rendered safer against catching fire by being impregnated with chemicals. All woodwork, the scenery and finally the costumes, particularly the light gauze costumes worn by the ballet girls, should be rendered non-inflammable by impregnation, which in the case of dresses must be repeated after each wash. The canvas scenes may be covered with fireproof-paints, and indeed one may go a step farther and substitute for the wooden and canvas decorations those of sheet-iron held in light, iron frames, or else asbestos-cloth, as urged by modern stage reformers. Instead of hemp cords, wire ropes should be used, and for the wooden drums and hoisting-apparatus the more modern hydraulic or the electric stage-appliances should be installed. No scenery accumulation should be permitted on or near the stage, and special fireproof scene-docks should be provided for the purpose beyond the limits of the stage-house.

A special point, namely the lighting of the stage and of the decorations, requires some mention. We know well that most fires originating on the stage are due to defective stage-lighting or to open flames, hence the stage-lighting should be modified. Such a modification — nay revolution — came about with the introduction of the incandescent electric light. It is scarcely necessary for me to praise its many points of superiority over gas-light for the theatre-stage, for its advantages are now well recognized. Of course, its installation does require careful attention to the details, but with wiring well insulated, and with motors and dynamos located in a special annex, nearly all danger is eliminated. The electric-light is not only brilliant, but readily brought under control. It does not vitiate the air, and above all, it does not create the fierce heat which is due to the numerous gas-flames serving to illuminate a scene. Finally, it does away with the dangerous lighting-up processes of rows of gas-lights, and thus removes one of the dangers inherent to the gas-lighting system. Hence the use of electric-light instead of gas is rightly considered one of the best measures to prevent fire in a theatre. It is, perhaps, unnecessary for me to mention specially that the above recommendation of the electric-light is confined to the incandescent light only, for the arc-light must be regarded as rather dangerous for use on the stage of a theatre. Where, however, electric-light is not available, and gas must be used, special pains should be taken to reduce the accompanying danger as much as possible, particularly where open flames are necessary, which should always be well protected. Care should also be taken in using the best available means for the lighting of rows of gas-lights, particularly those which illuminate the battens and likewise should care be bestowed on movable gas-hose connections for shifting pieces of the scenery. The lighting of the stage and of the main part of the auditorium, excluding the gangways at the rear of the seats, should be controlled from a gas-table on the stage, and the lighting of stairs, corridors, lobbies and foyers should be entirely separate and controlled from the foyer only.

To render a theatre safe, there should be but one central heating-apparatus. Heating by steam is preferable to furnace-heating, which latter has a tendency to render the inside woodwork very dry.

Every theatre-building should have sufficient protection against lightning. The protection which a proper system of lightning-rods affords should not be underrated. Lightning-rods may prevent the outbreak of fire, and they may likewise serve to avert a serious panic, which may follow where a theatre-building is struck by lightning. In August, 1894, the Royal County Theatre, at Reading, England, was struck by lightning and the resulting fire completely destroyed the building, which, fortunately, was empty at the time. In several instances, where theatres were struck by lightning during a performance, the panic which followed resulted in the deaths of several people. Quite recently, on the night of June 7, 1899, a theatre at Chautauqua Lake, in the State of New York, was struck by lightning while a play was in progress. "With the crash, all the lights went out, but the audience was prevented from stampeding by the coolness of an actor." Still more recently, on the night of September 5, 1899, Robinson's Theatre in Cincinnati, O., was struck

by lightning during a heavy rainstorm, and the entire fire-department had to be called out, as the flames immediately burst forth.

A further safety-measure to prevent an outbreak of fire consists in the efficient watching of the theatre-building, particularly before and during a performance. The inspection should be directed particularly to the heating and lighting apparatus of the theatre. Many fires break out within two hours after the close of a performance, hence it is an excellent precaution to have the entire building carefully gone over and watched nightly. To insure safety of the spectators, however, with which we are principally concerned, it is necessary to maintain in a theatre, during the entire performance, an efficient fire-watch, composed of well-drilled and experienced members of the city fire-department, and to institute and maintain daily inspections before the performances.

Then again, safety is attained by having regular periodical inspections of the building by fire-experts, architects, engineers, and firemen, and also special inspections and actual tests of the gas-piping, of the electric appliances, of the water and fire-extinguishing appliances, also tests of the efficient working of the stage-roof ventilators, to which I will refer hereafter, of the fire-alarm apparatus, of the heating-apparatus, and of the lightning-rod protection. Besides these, there should be occasional inspections by the authorities, which should preferably be unannounced.

Every theatre should be provided with the most improved and modern means for quickly detecting, reporting and signalling an outbreak of fire. This includes an automatic fire-telegraph system and telegraphic or telephonic communication with the nearest fire-engine house, with fire-department headquarters, with the city water-reservoir or water-department headquarters, and with the station-house of the life-saving patrol.

Finally, many measures tending to prevent an outbreak of fire are matters belonging to theatre-management. Every theatre-manager should issue rules of order, and should see to it that they are strenuously enforced. He should insist upon and maintain strict discipline and order in all parts of the building; he should maintain regular fire-drills carried out by the stage employés and the theatre-staff. Instruction should be given in the use of the fire-extinguishing and life-saving appliances, and special instructions issued to the watchmen in the theatre.

Gas-leaks should be reported immediately; lamps on the stage, if required, should be handled with care, and all exposure to draughts avoided; the use of alcohol-lamps in the dressing-rooms should be forbidden; safety-lanterns or electric-candles should be provided for use of those entering large costume or property rooms; extreme caution should be exercised in the lighting of foot and batten lights of gas, and in the use of matches, candles, oil-lamps, firearms, fireworks, representations of conflagrations in spectacular plays, benzine or turpentine in workshops or costume-rooms. Smoking should be rigidly prohibited in all parts of the house, including the actors' dressing-rooms, and be permitted only in a special fireproof smoking-room. All accumulation of rubbish, straw, oily rags, etc., and combustible material, liable to spontaneous combustion, must be avoided. No obstructions should be permitted of the fire-appliances. The manager should not only enforce the greatest carefulness of persons on or near the stage, but also insist upon the constant and nightly use of the fireproof-curtain; he should see personally that all exits are constantly used and that they are kept efficiently lighted until all persons have left the building.

[To be continued.]

ARCHITECTURE IN AMERICA.

IT is true that religion has had great influence on art and architecture. It is equally true that "art is the mother of devotion," but the question is whether both of these, namely, religion and architecture, take their flight as civilization progresses. One would think this would be the case if the opinions which have been expressed so well by Mr. George Clarence Gardner, in the *American Architect* of September 23, are correct. He says, "First of all, the statement may be made, broadly, that none of the Fine-Arts has ever amounted to anything which was not founded on religion, or was not an outgrowth from it. It is only, I think, by accepting this statement without qualification that the wonderful artistic development of certain nations at certain periods of the world's history can be explained, unless their growth can be said to keep step with the growth of civilization. But civilization apparently has nothing to do with it. This, of course, depends on the definition of civilization, but, taking the word in its generally-accepted sense, it cannot be said that those countries which have made the most rapid progress in all that constitutes a well-governed state have shown any marks of superiority in their art or their architecture."

This makes civilization to hinge on government and seems to ignore the fact that it has existed when government was defective and even oppressive. The illustrations which the writer draws from modern history may be said to favor his position, but if we go back to ancient times, illustrations might be given which would prove just the contrary and the question is whether the history of architecture can be written without taking in these times, and whether its proper effect can be shown if we exclude them.

There are several points which are important to consider if we would properly understand the subject. It is a fact that religion in ancient times was the chief source of both art and architecture, and

none of the fine-arts then amounted to anything which was not an outgrowth from it. There was a good reason for this. Religion was the chief influence and was placed above all other influences, but was in a sense exclusive and remote from the touch of the common and unlearned classes. The temple was a shrine and was rarely entered by any one except the officiating priest, even the king was not allowed to enter the "Holy of Holies"—and yet the king was always ready to contribute the wealth of his empire to the support of the sanctuary. This would naturally result in the rapid progress of architecture in these ancient seats of empire.

1. There was an astronomical system which embodied itself in the architecture of the period. It was not merely the worship of deified kings or personal divinities but there was a worship also of the nature powers under animal and human semblances which required both art and architecture to express. Illustrations of this are numerous.

2. The influence of the learned classes was felt in those times more than in modern days.

The very arrangement of the cities on the plains of Babylonia was according to the points of the compass. The centre was sacred, but the divisions of the empire were arranged around this centre according to fixed rules, very much as was the case in China. The orientation of the Pyramids was according to fixed rules of astronomy as it was then known.

If we go to Babylonia we shall find the lofty Zigurats lifting its terraced platforms above the city, each terrace having a different color to indicate the stellar divinity to which it was consecrated, the shrine to the sun being placed on the uppermost terrace or upon the summit. "The Egyptian emperors, gods deified by their subjects while living, and by their families and brother-rulers when dead, built the tremendous 'palaces' of which a few ruins are now left us as symbols of their omnipotence," but these so-called "palaces" were temples which were the outgrowth from primitive shrines. The priest and emperor was the same person at this time—or at least the priests were subject to the emperor—but even then the influence of the learned class was paramount and the temple was sacred to the worship of the divinities, rather than to the deifying of the king. The great propylæa lifted their massive and lofty forms high up before the temples themselves, and entrance to the courts was gained by the people only as they were led by priest and king together in the great religious processions. Preceding these temples were the Pyramids, but even they were guarded from approach by long lines of sphinxes, and the interior was perfectly inaccessible, for they were devoted to the preservation of the dead.

The progress of architecture was, however, the same in Egypt as in Babylonia and Assyria. The shrine was brought a little nearer to the people, though the same motto was written in unseen letters on the temple as it had been on the shrine:—

"Procul, Procul, este profani."

In Greece the temple was also a shrine and the people were excluded from entering.

The great temple of Zeus at Olympia was, to be sure, accessible, or, at least, the court was open to the people, and was full of the specimens of art, and was itself a triumph of art, but it was preceded by the shrine which was a mere cella in Antis and contained a single statue, the celebrated statue of Zeus.

These peripteral temples were models of art and architecture. The columns were carried entirely around the cella, but were the outgrowth of the original shrine. The preceding varieties were, first, the "temple in *antis*;" second, the "prostyle" and "amphiprostyle," and the "peripteral."

3. It was during this strange development of the shrine into the temple that the progress of Hellenic architecture was made, and the change from Doric to Ionic, and from Ionic to Corinthian, took place. Certainly it cannot be denied that religion was the source of architecture and art in Greece. Even the highest and best specimens of statuary were those in which the artists embodied their idea of divinity. There was an inspiration in art which brought out the spirit of divinity from the mute stone and made it speak. The light of divinity shone through the dead marble.

The Semitic people embodied their ideas of divinity in their architecture more than in their art; but the highest development was in the poetry of the Hebrews. Their temple was a shrine at the outset and continued to be, but it underwent the same changes as in Egypt, Assyria and Greece.

Solomon's Temple was a palace for the Great King who was invisible, but who dwelt in the "Holy of Holies," and was approached only through many sacrifices.

4. The question is, whether civilization has done away with this idea of the divinity being separate from the people, and whether architecture has declined because of this fact. There has certainly been a change, and if the worship of art as the embodiment of divinity is the only true form of religion, then it is manifest that civilization was, and always is, bound to dismiss art and architecture, or, at least, neglect and leave it to obscurity. But is this the correct definition of religion? Is it not as limited and imperfect a definition of religion as the author's definition of civilization? Civilization does not consist altogether in government, nor does religion consist altogether in art. There was a fireside in ancient homes and the divinity of the hearth was supreme even in Greece. Any one who has read the famous work of De Coulanges will realize this. The

Lares and the Penates were always present. The home was modelled after an entirely different pattern. The architecture of the house was exactly the reverse of that of the temple in Greece and may have been so in other Oriental countries. There was a dead wall outside of the house, but within there were columns, works of art, and a court with fountains playing within the court. The gateway was exclusive, strangers were rarely admitted to the sacred precincts without some kind of an introduction.

5. The change which occurred after, upon the introduction of Christianity, was very marked. It opened the house and made it attractive on the outside, but it also opened the sanctuary and made it attractive on the inside. The temple became a house and the house became a temple.

6. This is the work which civilization under the influence of Christianity, has accomplished and is still accomplishing. There was a time when the open-air temple was prevalent in England. Stonehenge is a good specimen of this ancient architecture, but if we compare Stonehenge with St. Paul's, or the Treasure-house of Mycenæ with St. Peter's at Rome, we shall see the contrast. The adornment of the walls of St. Peter's was the work of the highest art and was accomplished by the best artist. It was also the product of civilization. Learning had revived; art had arisen out of its ashes, phoenix-like; religion was extant. The frescos of Fra Angelico had developed into the painting of Michael Angelo. St. Peter's is unlike the Sistine Chapel; it is designed for the people, and free entrance is given to its sacred precincts. Still the Mediaeval idea was that the cathedral was to be totally unlike the home, and there was an air of exclusiveness about it, for while the people were admitted and received an influence from the art forms, yet the peculiar charm of the home was lacking. In America the church is rapidly growing into a home for the people. This is the American idea and is worth considering.

7. What shall we say of the Puritan? There was a time when he thought that the worship of art was idolatry. The Puritan was an iconoclast by virtue of this false idea, but did the Puritan stay in that mood? Did he not bring the home with him to America, and was there not a sacredness to that home, homely as it was? The argument is plain. It was the religion of the household which was transported and became the source of true progress in this country. The home of the Aryan was inherited. Greece, Rome, France, England, Germany were the resting-places where the divinity of the hearth remained for a time—that divinity dwells in America. France is, after all, not the best model. While there may be there the best models of art, there are not the best homes. Government is not as stable in France as in England, Germany or in America.

8. As to the future of art and architecture in America, there is much uncertainty, for architects seem to be inclined nowadays to make their profession subordinate to that of the engineer. In fact, there are editors of architectural journals who say that they have no interest in the history of architecture. The question which they ask first of all is, how can they adapt their art to the new-style building. In other words, the "skyscraper" has revolutionized the whole system. This looks as if modern civilization was likely to dismiss architecture and religion altogether from society, and subordinate everything to the demands of commerce. The decorating of a steel-frame and making a big ornamental box is not architecture. There is a process of differentiation going on which will separate the house-architecture from that of the church, the church-architecture from that of the public edifice, such as capitols, libraries, halls, institutions of learning, and will also give place to the strange anomaly which is called the "skyscraper." The unity of architecture is not likely to appear again. There may be an American style, but it will appear in the home rather than in the commercial building, or even in the public edifice, or in the modern "flat." This style will, it is to be hoped, supplant the ugly excrescences which have arisen as a result of copying the Old World patterns. Queen Anne style has had its days, as has also the Mansard. Holland and Germany have given about all that we can bear. The American style, probably, will be the outgrowth of the patterns which we have inherited from England and have been embodied in the old Colonial buildings. The religion of the home was embodied in that style; it may be modified, but cannot be borrowed from France or Italy. The American home is the object to which we may well give our best thoughts and make it the place where religion and civilization shall dwell together.

STEPHEN D. PEET.



NEW YORK CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

AT the annual meeting of the New York Chapter of the American Institute of Architects, held on October 11, 1899, the following-named officers and committees were elected:—

President, Walter Cook; *Vice-President*, A. W. Brunner; *Treasurer*, James B. Baker; *Recording Secretary*, A. L. Brockway; *Corresponding Secretary*, Charles I. Berg; *Executive Committee*, P. L. Le Brun, John M. Carrière, Richard H. Hunt and H. R. Marshall.

Committee on Library, William S. Post, H. R. Marshall and Thomas Tryon; *Committee on Education and Publication*, William M. Kendall, John Galen Howard and C. A. Rich; *Committee on Examinations*, A. F. D'Oench, Representative on the Board of Examiners, R. W. Gibson, Joseph Wolf, A. L. Brockway, William A. Boring and R. M. Upjohn; *Auditing Committee*, William A. Boring and George L. Heins; *Nominating Committee*, A. L. Brockway, Charles A. Gifford and E. P. Casey; *Committee on Professional Practice and Competitions*, George E. Harney, Joseph H. McGuire and Walter B. Chambers; *Committee on Fine-Arts Federation*, Walter Cook, G. L. Heins and A. W. Brunner, *Delegates*; William R. Mead, R. H. Hunt and William H. Russell, *Alternates*.

CHARLES I. BERG, *Corresponding Secretary*.

THE T-SQUARE CLUB OF PHILADELPHIA.

THE T-Square Club has lately begun the work of the year under the presidency of Mr. Adin B. Lacey. The opening meeting was largely attended, not adjourning till after midnight, much interest being aroused by the first of the series of seven competitions, upon the basis of which, taken as a whole, a European Travelling Fellowship will be awarded in June. It was the desire of the committee to encourage logical thought by giving continuity to the monthly problems in relating them to the same subject. After careful consideration they set the every-day problem adapted to the practical uses of the draughtsman, a modern American suburban house with accessories. The Committee, however, in line with the recommendations of the Architectural League of America, have gone further, giving a local character to the design, in requiring that it shall reflect the spirit of Philadelphia institutions, but at the same time the latest developments of our modern American life, and that the disposition of the estate shall be considered in its relation to the community. In the first competition, which was practically a preliminary sketch, mentions were awarded to Mr. Lloyd Titus, First; Mr. I. Edgar Hill, Second; and Mr. Herbert C. Wise, Third.

In addition to the regular monthly competition, an exhibition of over one hundred sketches made by the members of the Club during the summer was held and mentions awarded, in the following order: To Mr. Alfred M. Githens, for sketches of manor-houses in England; to Mr. Arthur Brooke, for architectural studies in pen and pencil; and to Mr. Wm. A. Supplee, for water-colors of scenes in Holland.

The T-Square Club is making strenuous efforts to ensure a signal success for the exhibition to be held at the galleries of the Art Club, from December 17, 1899 to January 6, 1900, and to give the catalogue added interest and value.

The Exhibition Committee has been fortunate in securing the experienced assistance of Mr. D. K. Boyd, under whose presidency the Club was incorporated, as editor of the catalogue and director of the exhibition.

ARTHUR S. BROOKE, *Secretary*.

ILLINOIS CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

AT the annual meeting of the Illinois Chapter of the American Institute of Architects, held in the Art Institute on Monday, October 16, the following officers were elected for the ensuing year, viz:—

President, S. A. Treat; *First Vice-President*, W. C. Zimmermann; *Second Vice-President*, P. B. Wight; *Treasurer*, H. B. Wheelock; *Secretary*, George Beaumont. GEORGE BEAUMONT, *Secretary*.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

SOUTHEAST ANGLE OF COURT-YARD: "RICHMOND COURT," BOSTON, MASS. MESSRS. CRAM, GOODHUE & FERGUSON, ARCHITECTS, BOSTON, MASS.

[Gelatin Print issued with the International and Imperial Editions only.]

"RICHMOND COURT" APARTMENT-HOUSE, BEACON ST., BOSTON, MASS.

PLANS and other illustrations of this group together with description will be found in our issue for March 18, last.

A COMPETITIVE DESIGN FOR EVACUATION MONUMENT, DORCHESTER HEIGHTS, SOUTH BOSTON, MASS. MESSRS. CABOT, EVERETT & MEAD, ARCHITECTS, BOSTON, MASS.

GRACE CHURCH, BROOKLYN, N. Y. MR. H. M. CONGDON, ARCHITECT, NEW YORK, N. Y.

THIS church will be situated on the corner of Brooklyn Avenue and the Eastern Parkway, a very prominent position, the lot measuring 150' x 220'. Ultimately a rectory will connect with the church at the west end, on Brooklyn Avenue. The season's work will stop with the laying of the foundations.

THE SAME FROM THE NORTHEAST.

[The following named illustration may be found by reference to our advertising pages.]

MONUMENT TO PASTEUR, LILLE, FRANCE. LOUIS CORDONNIER, ARCHITECT; M. CORDONNIER, SCULPTOR.

THIS plate is copied from *L'Architecture et la Construction dans le Nord*.

[Additional Illustrations in the International Edition.]

THE COURTYARD FRONTS: "RICHMOND COURT," BEACON ST., BOSTON, MASS.

[Gelatine Print.]

ENTRANCE TO ST. ALBAN'S HALL: "RICHMOND COURT," BOSTON, MASS.

[Gelatine Print.]

PART OF STAIRCASE: CHÂTEAU DE BONNETABLE.

THE HIGH ALTAR: THE ORATORY, BIRMINGHAM, ENG.

SANDSEND HOTEL, SANDSEND, ENG. MR. F. A. TUGWELL, ARCHITECT.

SUMMER-HOUSES, ETC., SCARBOROUGH, ENG. MR. F. A. TUGWELL, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE LIGHTING OF A CATHOLIC CHURCH.

FIRST NATIONAL BANK BUILDING, PITTSBURGH, PA., Oct. 13, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — Will you kindly tell me through the medium of your journal, "the best modern method for lighting Catholic churches by gas, and where should the fixtures be placed"? The church in question has two rows of columns and a dome at crossing of transepts and nave. It is to be wired for electric-lights and consideration must, therefore, be given to the latter system, which will come into use at some future time.

By complying with the above, you will oblige, yours truly,
J. T. COMES.

[We do not think that there is any rule in regard to the subject. The clergy of Catholic churches generally make the effect of the interior of their own church a matter of loving, and often very intelligent, study, and they are usually familiar with many church buildings, at home and abroad, so that the architect's trained knowledge and taste may find advantage in consultation with them. The best foreign churches usually have lamps suspended through the nave, and the long vertical lines do much to give an effect of height to the roof, and of repose to the interior, but care should be taken, in using light in this way, not to make the clusters of lamps too large, for nothing is more disagreeable than a glare in one's eye. The lighting of the dome, if it is large, will best be done by several small suspended clusters, aided by side-lights, and not by a large central chandelier. The aisles must, probably, have side-lights. In general, by far the best effect will be obtained by using a large number of small clusters, or even single lights, both for side-lights and overhead lamps. It costs more to wire in this way, and the expense for fixtures will be greater, but a church illuminated by a multitude of little sparkling lights is so infinitely superior in beauty and convenience to one fitted with huge chandeliers, like a theatre, that the extra cost should not be regarded. — EDS. AMERICAN ARCHITECT.]



THE ORGANIZATION OF A TINPLATE TRUST IN ENGLAND. — The Welsh tinplate-makers are trying to make permanent the improvement in trade which has appeared among them. This is very evident, and to make matters better, they are trying to take their workpeople along with them. Herein they are wise, for the tinplate-trade in the principality has suffered so much in the past through strikes and lockouts that any scheme having for its object the placing of the industry upon a more profitable basis which did not include the operatives as well as the masters would be a foredoomed failure. The industrial warfare now going on in Denmark, with all its disastrous consequences to masters and men alike, affords another lesson in the same direction. It was recently proposed to form an alliance in the Welsh tinplate-trade upon the same basis as that existing in the bedstead-trade and some other industries of the country. Practical investigation, however, found this unsuited to the tinplate-makers' requirements, but the matter of combination was not allowed to rest here, and the issue is that an

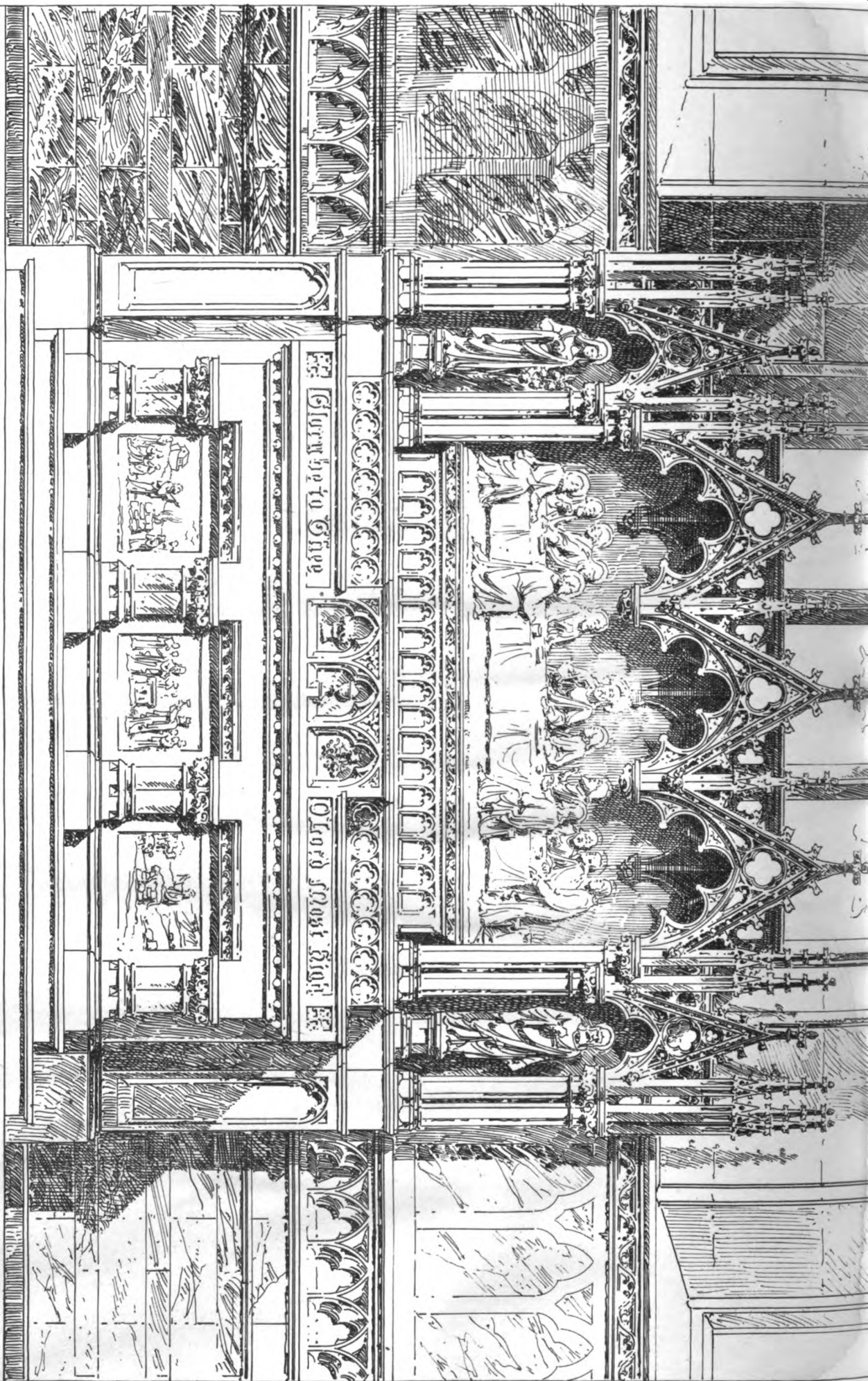
association is now almost completed, entitled the Plate and Sheet Manufacturers' Association, which will include nearly the whole of the Welsh makers, and have for its object a prevention, if possible, of the hitherto ruinous underselling which has prevailed. Articles of association have to be signed by about eighty firms, many of them limited liability concerns, before the project can be considered in any way complete, and we understand that the adherence of the necessary majority is being rapidly secured. At present the controllers of some 280 mills have signed, and a canvass of the trade, conducted some little time since, showed that practically all the employers were in favor of the movement. Among the earliest matters which will have to be considered by the new body are various minor labor troubles which have arisen at some of the individual works, and the representatives of the men's union are to be invited to a joint conference to deal with these disputes. At a previous gathering of the employers, uniformity of wages was considered an essential to the general welfare; but to make wages uniform meant that the Llanelli employes and some others should give up 13 1-2 per cent of wages that they were entitled to by agreement until the end of next December. This, however, they did give up, and thus established what ought to be a nine-months' peace in the tinplate-trade and an excellent foundation for the combination now being formed among the employers themselves. — *London Engineer*.

A SCULPTOR BROUGHT TO TERMS. — The Victor Emanuel monument which was unveiled in Turin a few weeks ago has had a curious history. As far back as 1879 King Humbert gave a million lire for the purpose of having a worthy monument of Victor Emanuel erected in that city. The task was assigned to the sculptor Carlo Costa, who agreed to complete the work by 1886, and who gradually received all but 60,000 of the million lire. But the monument was not completed by 1886, nor even by 1896. The city then brought suit against Signor Costa, who defended himself on the grounds that he could not command his inspiration, that in the good old day artists were not expected to furnish works on time, and that Leonardo da Vinci, for example, had required eighteen years for one of his works, and forty for another. But although all the artists sided with Costa, the city insisted on the work being promptly done, and the artist at last yielded and finished what is conceded to be a very fine statue. — *N. Y. Evening Post*.

AMMONIA AS A FIRE-EXTINGUISHER. — The editor of the *National Druggist* gives some highly interesting information respecting the fire-extinguishing qualities of aqua ammonia, which are worthy of attention, as the following statements will indicate: "In one instance, where fire had originated, probably from spontaneous combustion, in a pile containing several tons of cotton-seed, and the interior of which was almost a solid body of live coal, a half gallon of ammonia completely smothered the fire. In another, which occurred in Savenay, France, the vapors of a tank containing fifty gallons of gasoline caught fire in the linen-room of a laundry. The room was instantly a mass of living flames, but a gallon and a half of ammonia-water thrown into it completely and almost immediately extinguished the fire. The ammonia was in a glass demijohn in an apothecary's shop next door to the laundry, and was thrown into the room by the druggist as an experiment. To use his own words in reporting the circumstance. . . . 'The effect was instantaneous, torrents of black smoke rolled upward in place of flames, and in a moment every trace of fire was gone. So completely was the fire extinguished, that workmen were enabled to enter the room almost immediately, where they found the iron tank of gasoline intact.'"

SUPPLY OF SEA-WATER TO LONDON. — We learn that a company is about to be formed for the purpose of bringing sea-water to London, from an intake at Lancing, in Sussex, whence the water is to be pumped to a level of nearly five hundred feet at the top of Steyning Hill. It will then flow by gravitation through a main aqueduct to Battersea, and thence across the Thames to Cromwell Road, South Kensington, whence branches are to be laid for service in Paddington and Kensington, Mayfair, Marylebone, and the Strand districts, and in Whitehall and Westminster from a conduit at Charing Cross. It is also proposed to lay another branch main from Farringdon Street to Shoreditch, and along the Bethnal Green Road to Victoria Park. We hope that the main object of this is to provide for sea-water swimming-baths in London, which would be an immense boon. A company was formed a good many years ago to start a very large sea-water swimming-bath in the neighborhood of Westminster, but the project was abandoned, we believe through difficulty in raising the required capital. We should think that a company for providing sea-water in London for this purpose ought to succeed, if the operations are on a large scale and the supply of water ample. — *The Builder*.

REMODELLING THE BLUE-COAT SCHOOL. — One of the most interesting buildings in Westminster, known as the Blue-coat School, which stands at the rear of the Hotel Windsor, in what was formerly Palmer's Village, is now being extensively remodelled, with a view, it is understood, to its being taken over by the existing school in Palmer's Street. This quaint old school, according to an inscription on the pediment of the south front, was founded in 1688 by William Greene. Its old-fashioned windows have been replaced by others of modern design, but the statue of a Blue-coat boy over the doorway of the north front, and a painting of one of the scholars beneath the pediment on the south side, have been permitted to remain untouched. The schoolmaster's house adjoining, which was erected by public subscription in 1709, has, however, been replaced by a large and pretentious building. It is interesting to note that the school was recently sold to the local vestry on the condition that it should not be demolished until the expiration of twenty-five years. In addition to the Blue-coat School, there were also Black-coat and Green-coat institutions in Westminster, and there is a Gray-coat School, which celebrated its bi-centenary last year, all of which derive their names from the distinctive garb worn by the pupils. — *London Daily News*.



Memorial Altar and Reredos.
 Grace Church, Baltimore, Md.
 HENRY M. CONGDON,
 ARCHITECT,
 NEW YORK.

MADE IN U.S.A.

AMERICAN ARCHITECT AND BUILDING NEWS,

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OCTOBER 28, 1899.



SUMMARY:—

Labelling Exhibits in Museums of Art.—Selection of the Sculpture for the Indiana Soldiers' and Sailors' Monument to be guided by Popular Vote.—The United States Pavilion at the Paris Exposition.—Designing the new French Postage-stamp.—New Laws as to Archaeological Exploration in Greece.—Wandering Electrical Currents and the Manhattan Railway.	25
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A LITTLE discussion has been going on in the Boston *Transcript* about the labelling of objects in the local Museum of Fine-Arts. A lady writes to that paper, quoting the remark of the late Professor Goode, of Washington, to the effect that a museum should be "a collection of labels with illustrative objects attached," and saying that there should be more labels and other means of instruction attached to the pictures and other things shown in the galleries of the Museum of Fine-Arts. To this letter Mr. Benjamin Ives Gilman, the Curator of the Museum, replies in an interesting communication, in which he maintains the rather startling proposition that "a museum of fine-arts does not exist for purposes of instruction at all, but solely for purposes of enjoyment." He goes on to say that while Professor Goode's definition is excellent as applied to museums of science, in which, as is the case in the one so long under his own charge, the labels may almost form a treatise on ethnology, or mineralogy, or natural history, with the objects themselves as illustrations, the case is very different in art museums. "Whenever," as he says, "instruction contributes to artistic appreciation, as it does by no means invariably, agencies of instruction, such as labels, catalogues, viva voce interpretations, etc., are permissible in a museum of fine-art. But they are permissible only in so far as they contribute to the artistic pleasure of the visitor, and not at all if they interfere in any wise with that pleasure, however much they may add to his intelligent acquaintance with the objects they concern."

NEW as this doctrine is, we believe that most persons who care for works of art will subscribe heartily to it. There are some galleries where the labels, with their obtrusive display of information condescendingly adapted to the vulgar mind, almost destroy the pleasure of the visitor. It is not so well understood as it should be that to appreciate thoroughly a beautiful picture requires an effort of attention and imagination on the part of the beholder, which should be as little disturbed as possible by inscriptions in large black letters, giving data of historical and biographical interest only. No one, for instance, receives any deeper impression from Millet's noble picture of peasants picking up potatoes in the Boston galleries by being loudly told when the painter was born and died, where he lived, or what school he belonged to, and it is quite possible to lessen the benefit which he might derive from it by thrusting upon him these facts, which are quite irrelevant to the impression which the picture was intended to convey. It is true that there is a class of modern artists to whom inscriptions are indispensable. What would the Grosvenor Gallery

be, for example, without such legends as "Love is Sweet!" to explain the conduct of the disagreeable-looking female who seems to be having a fit over a piece of blue paper; or a long quotation from Tennyson, about Sir Lancelot, or King Arthur, to give interest to what otherwise would appear to be simply an ill-drawn study of a cockney model decked out in tin armor; and, indeed, it may be said of modern British art generally that it strives after second-hand effects, depending, usually, more on recalling to the spectator's mind the impressions that he has already received from some work of literary art than on conveying to him directly a new impression from the mind of the artist. The difference between the two things is more important than might at first appear, for every art has its limitations, and for an artist to treat painting and sculpture simply as a means of illustrating some one else's ideas, instead of his own, is to tie his art with clogs on both feet. In our day, when every one understands literary art, and few can appreciate pictorial art, the temptation to help out the latter with the former is strong, and ought to be resisted; and Mr. Gilman's idea that the pictorial impression of works of art exhibited in galleries should be protected from interference, is not only valuable to students and the public, but may have great influence on the development of art itself.

THE Regents of the Indiana Soldiers' and Sailors' Monument have taken a step which deserves imitation. It will be remembered that the design for the monument itself, by Mr. Bruno Schmitz, now of Berlin, was selected in a competition quite notable for its fairness, and for the interest of the profession in it. The work is not yet complete, but it has advanced far enough to allow some of the sculptured groups to be placed on it, and others are to be added. As those already in place have been criticised by artists, who, it must be confessed, are, in this country, somewhat disposed to criticism, the Regents have determined to take a sort of popular vote on the designs for the remaining groups, by sending photographs of the models which have been submitted to the principal cities and towns of Indiana, for public exhibition, inviting, at the same time, observations in regard to them from persons interested. Although the Regents do not abandon their control over the choice, it is said that they will be guided, to a great extent, by the public verdict.

IT need hardly be observed that this sort of submission of artistic matters to popular vote, although it has been common in the most artistic countries in Europe for centuries, is new here, where such control as is exercised over the design of public monuments is generally placed in the hands of "Art Commissions," or similar bodies of persons assumed to possess superior intelligence in artistic matters. We have before pointed out that, while some enlightened control over public art is undoubtedly desirable, the practice of handing such control over to Art Commissions involves great danger to the artistic development of the country. In something the same way that sacerdotalism destroys religion, the control of artistic matters by any clique, official or otherwise, destroys public interest in them, at the same time that it chills the sensitive and timid artists, who are, usually, just the ones whom it is most desirable to encourage. Whether the public criticism that the Indiana Regents will get will be of any value or not is of little importance, the main thing being to interest the community at large, and to encourage artists to try to do the same; but we are inclined to think that it will be worth more than is generally imagined. In one of the letters to the Boston *Transcript* about the labelling of objects in the Museum of Fine-Arts, the writer, pleading for the attachment of explanatory descriptions to works of painting and sculpture, illustrates her argument by saying that she once took an ignorant boy to see French's Milmore monument, known as "Death and the Sculptor." On asking the youth what he supposed to be the meaning of the group, he replied: "The man is nailing the angel's hand to the wall." The correspondent of the *Transcript* finds in this incident a reason for "illuminating," by means of descriptive labels, the intellects of the unlearned in regard to things which "to the trained mind" have "a perfectly obvious meaning." The force of this inference,

as applied to the labelling of pictures, we need not here discuss, but it has an important bearing on the value of lay criticism, of which the boy's innocent mistake was a good and forcible example. Mrs. Mead says that the trained mind finds a perfectly obvious meaning in French's group, but a moment's consideration will show that this is simply because the "trained mind," having seen thousands of representations more or less similar, and having heard or read the explanations of them, has learned what they are intended for, and has in this way unconsciously acquired a knowledge of a great number of conventional signs, by the help of which it interprets things which the untrained mind misunderstands. If art were a matter of symbols and conventions which none but the initiate could comprehend, the theory that trained minds were necessary to understand it would be defensible, but it is not, and the danger of making it so is one of the principal reasons for caution in putting the control of public art in the hands of persons familiar with current artistic conventions. In the case of the Milmore monument, the boy's mistake, although a more instructed person would not have made it, pointed to a real defect in the sculpture, for no work of art can be called perfect the intention of which any person could interpret wrongly. The people of this generation understand literary art so well, and graphic art so imperfectly, that points of this kind may often be illustrated by literary parallels; and we might ask, taking for example the scene of the death of Paul Dombey, whether Dickens's art would have been perfect if there were any uncertainty as to whether Paul was leaving this world forever, or only going to sleep, or if a foot-note were necessary to explain that Florence cried from mental pain, and not from the toothache. No one with ordinary sensibilities needs an Art Commission to tell him where to cry over Dombey and Son, or to point out the proper place for a thrill in the Messiah, or the Ninth Symphony; and the sooner we find means to submit the other arts to popular judgment, the better it will be for the arts as well as the public.

AMERICANS who intend to visit the Paris Exposition next year will be glad to know that the Pavilion of the United States has been assigned a very favorable situation in the Exposition grounds, on the Quai d'Orsay, on the south side of the Seine, and very near the Invalides. The building has a slight resemblance to the Administration Building at Chicago, being square in plan, and covered with a dome one hundred and seventy feet high. The central rotunda, which is open from the ground to the top of the dome, forms the principal feature, all the rooms being disposed around it, and opening either from it or from galleries surrounding it at different levels. On the ground-floor will be a "resting-room" for ladies, at the right of the entrance; one for gentlemen on the left; and a "conversation-room," common to ladies and gentlemen, in front. On the second story are small rooms assigned to the different States, and opening on a gallery; in the third story are the offices of the Commissioner-General, and the fourth story contains more rooms for States. The arrangement combines, we might say, the monumental with the inexpensive very cleverly; and, although the little parlors, which are only about thirteen feet wide, and thirty-five feet long, will hold but a small fraction of the Americans who would probably like to use them occasionally, those who find them too crowded will find consolation in observing that, on a small site, the building being only about eighty feet square on the ground, Mr. Coolidge has been able to contrive a structure which will be dignified and conspicuous, even among the enormous masses of the Exposition buildings. To add to its artistic effect, the United States pavilion will be adorned on the outside with sculpture, George Washington and President McKinley being the subjects of the two most important works, while the interior of the rotunda will be decorated with historical paintings, in the style, it is to be hoped, of those in the Congressional Library at Washington.

TO illustrate the difficulty of the problem imposed upon Mr. Coolidge, and to appreciate the success with which he has solved it, architects must consider that, not only was it necessary to make the United States building small on the ground, smaller even than that representing the principality of Monaco, and less than one-third the size of the Mexican pavilion, but the building, like most of the others on the Quai d'Orsay, was required to stand over a double-track railroad,

which could not be interfered with, even for temporary exigencies of construction. Moreover, as a matter of design, it was necessary to devise something which would be at once conspicuous and dignified, and in decent harmony with the Turkish building, which immediately adjoins it, the Austrian, which nearly touches it on the other side, and the Italian pavilion, which is a much larger structure just beyond.

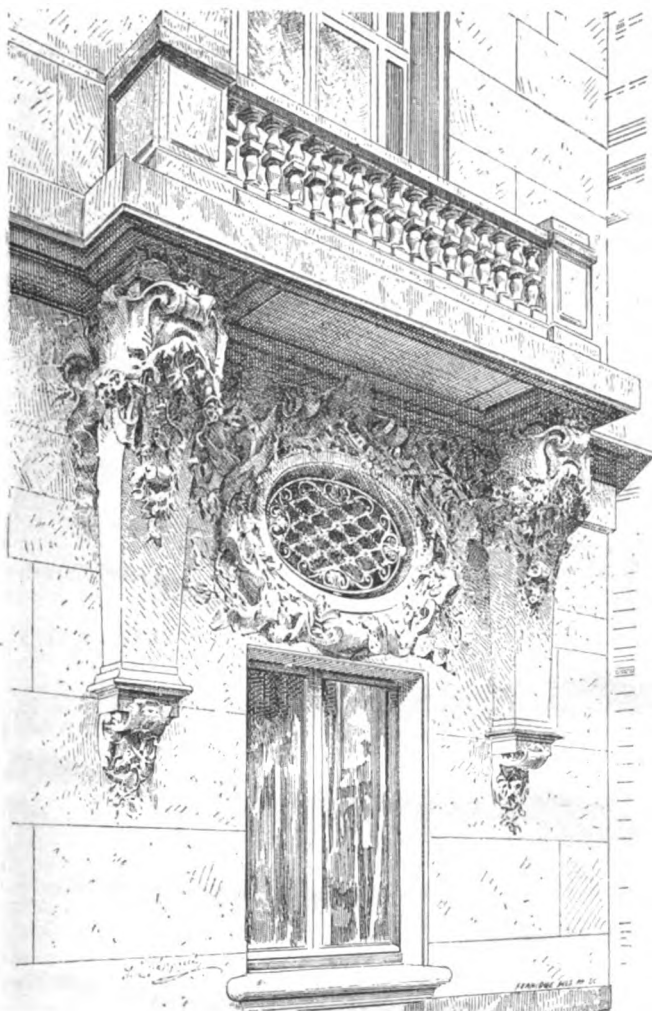
AMONG other items of news in connection with the Paris Exposition of next year, it is announced that the medal for awards is to be designed by M. Chaplain, and that the same artist, with MM. Roty and Dupuis, has been commissioned to prepare sketches for the new postage-stamp to be issued when the exhibition opens. M. Roty has also to design a tablet, commemorative of the Exposition, to be placed, presumably, on one of the permanent buildings, probably one of the Fine-Art Palaces.

THE Government of Greece has proposed to the Parliament of the Kingdom some new laws in regard to archaeological exploration which, if adopted, will have an important effect upon investigations in that country. Under the present law, the exportation of ancient works of art from Greece is absolutely forbidden, yet an extensive trade is carried on almost openly in such objects, and it is said that some of the Athenian dealers will undertake to deliver anywhere in Europe almost every variety of Grecian antiquities. Although the excavations carried on with official sanction are guarded by soldiers, the peasants often, in collusion with the guards, dig at night, and secure in this way choice specimens, which they sell to the Athenian dealers. Not long ago, the directors of the Austrian explorations at Lusi, in northwestern Arcadia, who had been disappointed in the number of bronze and terracotta objects which they found on a site which had been known to be very rich, discovered that the whole tract had been dug over, some months before, by the inhabitants of a village in the neighborhood, under the direction of one of the military guards, and that fine collections of bronzes were to be seen in some of the cottages of the village, from which, in all probability, they would be sent, later, out of the country. With a view to the suppression of this evasion of the law, which must result in the loss to Greece of some of its most precious treasures, the new Government bill provides that all objects of antiquity shall be submitted to official examination, and that, while the owner of the land on which such objects are found shall receive from the Government half the value, as appraised by an impartial commission, of works which the Government desires to keep, those determined to be unsuitable, or not needed, for the Greek museums, shall be returned to the owner of the ground in which they were discovered, who may then dispose of them as he chooses. This measure, while it would retain in the country the best works of art, and all novelties of historical importance, would allow of the legitimate enrichment of foreign museums with objects not needed in Greece, and should, in consequence, promote the interest both of foreign collectors and the native owners, both of whom place themselves, in illegal transactions, at the mercy of any unscrupulous middle-man who may choose to use his position to rob both.

THE old story about the leakage of electricity from the Brooklyn Rapid Transit Company's wires into the ground, particularly over the Brooklyn suspension bridge, has been revised, and is, this time, reinforced by an opinion from the electrical expert of the New York Board of Railroad Commissioners, declaring that his investigations have shown the existence of electrical currents in the ground, particularly near the structure of the Manhattan Elevated Railway, and advising that this company should be compelled to put its structure into such condition that there will nowhere be a difference in potential between it and other conductors in the ground of more than one volt. The engineers of the Manhattan Railway Company say, not without reason, that the best way to prevent their structure from being charged with electricity would be to restrain the Brooklyn Rapid Transit Company from discharging electricity into it; and it certainly seems rather hard to compel the railway company to keep its structure free, within a certain limit, from electricity, without giving it any means of controlling, or even of knowing, the quantity which other people will unload upon it from time to time.

THE SAFETY OF THEATRE AUDIENCES.¹—II.

3. MEASURES TO PROTECT THE AUDIENCE FROM FIRE AND SMOKE.

Balcony on the Rue Galilee, Paris. From *L'Architecture*.

WE have now discussed two principal safety-measures; namely, first, the exits and their proper arrangement to enable an audience to make their safe escape under all circumstances, and, secondly, measures tending to prevent an outbreak of fire. We must now point out two important further measures, which have for their object the protection of the audience, in case of an actual outbreak of fire, from both the fire or the flames and from the smoke and fire-gases incidental to every theatre-fire. Dr. Brouardel has given a very good description of what happens when a fire breaks out on the stage of a theatre. In the majority of cases the fire originates from stage-decorations catching fire, and, owing to the inflammable nature of the material usually adopted for them, large volumes of a thick smoke are at once generated, which contain both carbonic acid and carbonic oxide. The flames, the fire-gases and the smoke at once jump from the stage into the auditorium, particularly into the upper galleries, and within a very few minutes, incredible as it may seem, their deadly work is accomplished, and hundreds of people may be killed, partly by the heat and the flames of the conflagration, partly by the deadly gases which render respiration impossible after only three or four minutes. In many of the theatre-fire calamities recorded the deaths were due principally to suffocation by carbonic oxide, or by the inhalation of hot air. As proof of this assertion, Dr. Brouardel cites the fact that the dresses of many of the victims were found unscorched, dead bodies were found with the eyebrows and whiskers unsinged, and the bodies bore no marks of scalding, nor were they covered with blisters. Further proof that death was caused by carbonic-oxide poisoning was given by the analysis of the blood, which was found to contain carbonic oxide.

To guard against the dangers thus described, two important safety-measures have been devised, which can readily be introduced into every theatre-building, whether old or new. One of the measures consists in the use of a fireproof and smokeproof curtain in the proscenium-opening, to divide the auditorium from the stage; the other consists in providing large smoke-flues, outlets or ventilators in the roof of the stage.

¹ A paper by Wm. Paul Gerhard, Civil Engineer, Consulting Engineer for Sanitary Works, Corresponding Member American Institute of Architects, Honorary Corresponding Member British Fire Prevention Committee, etc. Reprinted from the publications of the British Fire Prevention Committee. Copyrighted in the U. S. by the author, 1899. Continued from No. 1243, page 22.

The fire-wall dividing the stage-house from the auditorium would not constitute a protection in case of fire, owing to the large stage-opening. This should, therefore, be closed by a fireproof-curtain.

Numerous discussions have been held about the best material for such a curtain. In Continental cities, and also in England, preference has been given to iron curtains, either of wire, or of flat or, finally, of corrugated-iron. Flat iron curtains have not, in practice, proved sufficiently strong to resist the air-pressure from the stage in case of fire and they have sometimes buckled out in the center and thus proved ineffective. Wire curtains prevent the passing of flames from the stage into the auditorium, but permit the passage of the deadly smoke, and, moreover, they give the audience, already panic-stricken, a full view of the fire, and thereby increase the rush to the exits and the wild excitement. Corrugated-iron curtains are by far the best of all iron curtains, as they are strong and fire-resisting, and at the same time, if properly fastened and guided at the sides, they are smokeproof. They are, of course, heavy to handle, and must be well counterbalanced. The best iron fire-curtains are doubtless those operated by hydraulic machinery. The mechanism for the raising and lowering of the curtain must be perfect from a mechanical point-of-view; this mechanism should be operated from the level of the stage, and preferably also from another accessible point. Several cases are on record where iron fire-curtains became stuck in the grooves when it was attempted to lower them. Accidents have also happened by the curtain falling down on the stage. Flat iron curtains have been bent and thrown by the strong air-pressure due to the expansion of the air by the heat of the fire into the auditorium. A much more practical fire-curtain consists of thick and strong woven asbestos-cloth, well guided in iron guides at both sides of the proscenium-opening. Such curtains are used exclusively in modern American theatres, and it is believed by experts that they are sufficiently fire resisting to keep flames and smoke from the audience until all have escaped by the numerous exits which are provided in modern playhouses. The fire-curtain is kept lowered in the theatres until the beginning of the performance, or the rehearsals.

With proper fire-walls between stage and auditorium and no openings in these above the level of the stage, and with a good fire-curtain, a fire breaking out on the stage will successfully be confined to this point until the house has been emptied and all the persons saved.

The other, equally essential, requirement consists of large outlet-openings for the smoke provided in the roof over the stage. These openings may be formed of regular vent-flues or they may be special forms like sliding skylights, which are quickly opened in time of need or which operate automatically. It is important that the ventilators should be of sufficient area to remove the volumes of smoke generated by the burning of much inflammable scenery. Some regulations require their combined area to be one-tenth of the area of the stage. When they consist of flues, their lower ends may be closed by a light muslin or other substance easily destroyed when the flames first reach the stage-roof, or they may consist of automatic sliding ventilators like those of the new theatres of New York City. Finally, the flues may be closed by registers operated from the stage by ropes or other appliances.

The chief object for which they are intended is that there should be created a strong draught from the level of the stage-floor up to the roof, and away from the auditorium. This will afford a very good protection to the theatre-audience, certainly until they have had time to make their escape in safety.

Should there be in the ceiling of the auditorium a ventilator, possibly even assisted by the upward draught created by the now obsolete central chandelier, it is necessary that arrangements should be provided for closing the ceiling-ventilator to prevent a draught from the stage towards the ceiling-vent in the auditorium. In Europe, several theatres have arrangements by means of which it is possible to close by one movement this ventilator and simultaneously to open the stage-ventilators. The stage-roof being invariably higher than that of the auditorium, it is natural that the draught towards the stage should be the stronger, and that thereby the audience will be protected against smoke.

The diffusion of smoke from the burning scenery into the staircases both of the part of the house before the curtain and in the stage-house should be efficiently guarded against, hence the requirements that corridors, lobbies and staircases for the public as well as for the stage-people should be smoke-proof. Doors should be provided between the auditorium and the foyers and corridors, likewise doors between the sides of the stage and the dressing-rooms.

Inside staircases are bad, as the air in them may become full of smoke, whereas outside stairs can generally have windows which will secure fresh air. Light in the stairs is also of importance, and therefore we have mentioned elsewhere it is essential to have a separate system of lighting of the exits and corridors and stairs; this will prevent confusion in the darkness due to smoke, and often avert danger from the people using the exits. The maintenance of the auxiliary lights in the exits is a very important safety-measure which in itself will prevent direful confusion and a crush. These lights will also prove of great utility to the firemen when entering a burning building, and in some cases they may assist them in finding and rescuing persons who may have fainted or become overcome from the smoke.

The abolishment of the central gas-chandelier in theatres is a

great improvement, but the ceiling ventilation in the auditorium cannot so easily be dispensed with, as during the times when the curtain is lowered there would otherwise be no ventilation for the auditorium. It is either necessary to arrange the ventilation on the so-called downward system, or else there must be provided a perfectly-working appliance which will permit the ceiling-ventilator in the auditorium to be closed whenever the curtain is raised, or at least when fire breaks out on the stage.

Regarding the auxiliary lighting of exits, I would mention that where these consist of candles or oil-lamps they require to have lanterns encasing the lights, which must be provided with fresh air-ducts to keep the lights burning in case of smoke.

4. MEANS FOR THE PROTECTION OF THE STAGE-PERSONNEL.

It is not sufficient that we should protect the audience from fire and smoke; the people behind the curtain are deserving of the same consideration for their safety. Owing to the fact that fires in the majority of cases break out on the stage of the theatre, the performers and stage-hands would be immediately and directly exposed to the flames, the fire-gases and the smoke, unless proper means for their protection are provided.

Hence the dressing-rooms should be completely isolated from the stage-house, as well as from the auditorium; the part of the building in which they are located should be isolated by fire-walls, and by a wide fireproof-corridor. There should be wide, well-lighted fire and smoke proof staircases for the performers, one for each side of the stage. These should lead directly to the courts on each side of the theatre, or to outdoors where the building stands isolated. The dressing-rooms should have windows to the outer air, and these should never be guarded with iron bars or grilles, which would render escape through the windows impossible; additional iron fire-escapes at these windows are desirable. It is advisable not to put the dressing-rooms of the actors too high up above the stage-level, as this would necessitate a long route in case of an alarm. Regarding the size and the dimensions of the stage-exits and exit-doors, the same rules as for the audience should apply, and they should be proportioned to the largest number of persons which may be on the stage and behind the curtain generally.

For those workmen who are employed during the performance in the fly-galleries or the rigging-loft, there must be provided an iron staircase, or preferably one on each side of the stage.

The greatest safety for the stage-personnel is attained, of course, by adopting a better construction of the stage, and doing away with as much woodwork and inflammable scenery as possible, or at least, where the cost of an iron construction cannot be borne, the scenery and the woodwork should be rendered unflammable by an improved fireproof treatment by chemicals.

Greater safety is also attained by rendering the dresses and costumes non-inflammable by impregnation. Space forbids my going into details of the various processes now available.

The stage-ventilators and the automatic-sprinkler system will also be efficient means of protection, the former by removing the smoke, the latter by the chance which it offers to put out a fire among the scenic decorations in its incipency.

Greatest care should be exercised in the planning of the stage and its accessories, and the success of a well-organized stage management will depend chiefly upon it.

In the actors' dressing-rooms attention should be paid to numerous small details tending to give greater security. Here all woodwork should be rigidly excluded, all open gas-flames must be well protected and smoking in dressing-rooms should be absolutely prohibited. The rules of the theatre-management should emphasize the need of greatest care on the stage with lights, matches, lamps, torches, fireworks and the use of firearms.

A properly-installed electric-lighting system on the stage will form another efficient protection of the stage-personnel, as already explained elsewhere in this paper.

Finally, it will enhance the safety of the stage-personnel if the carpenters', painters' and tailors' workshops are completely isolated from the stage-building.

Panic may break out on the stage as well as in the auditorium, hence, besides provisions against smoke and fire, means to avert a panic should be contrived, or at least every possibility should be afforded to the performers and stage-hands to make their escape in safety and to avoid a crush or jam with its often fatal consequences.

5. MEANS FOR LOCALIZING AND RESTRICTING A FIRE ON THE STAGE.

If, notwithstanding all possible precautions a fire actually breaks out on the stage, all efforts should be concentrated toward restricting and confining the fire. Good planning and sound construction will do more towards accomplishing this desired result than any human efforts at fire-fighting. Let the stage-building be planned and built so as to be completely isolated, forming a fire-risk in itself, and half the battle may be said to be won. This is accomplished by the use of fire-walls surrounding the stage on all sides; again, the fireproof-curtain, discussed in a previous section, will render efficient service in localizing the fire.

The proscenium-wall should have as few openings communicating with the auditorium as possible, and these should be provided with fireproof doors, of oak, lined on both sides with tin, and possibly arranged to close automatically. Again, it should be mentioned

that the construction of the fire-curtain must be such that it will close at the sides and not permit the smoke or flames to pass through.

Proper roof-ventilators will assist in removing the smoke from the stage, but in case of fire, all doors leading to the stage should be instantly closed to avoid a draught.

Fire-extinguishing appliances and a well-organized fire-brigade composed of the stage-hands and stage-machinists will prove useful during the first outbreak of a fire. An automatic fire-alarm system, regularly tried and maintained in good order, will indirectly help in localizing the fire, by at once giving notice of the outbreak. Lastly, a good water-service and efficient fire-pressure at the fire-hydrants will be the means to confine and restrict a fire. All fire-extinguishing appliances are to be considered as chiefly useful during the first few moments after the outbreak, for as soon as the flames have begun to spread, these devices will prove powerless, and the building should be turned over to the quickly-summoned fire-department, while all efforts should be concentrated on saving human life.

6. MEANS FOR SAVING LIFE.

In cases where the fire has spread and gained much headway, it may, notwithstanding all precautions happen that the safe retreat of persons in the theatre is cut off by flames or smoke. Therefore, it is essential that every theatre should be provided with at least some means for saving life.

The outside fire-escapes belong, first of all, to these measures for safety. There should be provided, besides these, outside iron-ladders, built into the walls, connecting the various roofs, and which may serve not only as means of escape for persons in the burning building, but which will prove extremely useful to the firemen in their work. In this connection mention should again be made of the necessity of omitting any bars or iron-gratings at the windows.

All large cities, and many of the smaller ones, now have in their fire-department a regularly-trained corps of life-savers. They make use of light but strongly-built scaling-ladders to reach persons at the windows whose retreat by the regular stairs and exits may have been cut off. In connection with these scaling-ladders it is worth while mentioning that, in the erection of the building, provision should at once be made for window cornices or sills so moulded and of such dimensions as to be adapted to the scaling-ladders.

The life-saving corps also make use of life-lines, of canvas-belts with clutch-hooks, or portable rope-escapes, and of guns for firing the life-lines into windows. They likewise use asbestos-cloth chutes, or life-saving sacks of flexible canvas, which they carry up the ladders, fasten securely to windows, and by means of which persons in danger are readily rescued. Some fire-departments use the jumping-net or cloth, and while by no means without danger to the limbs, a jump from a window into the jumping-net may save the life of many a person.

The theatre-management should consider the advisability of providing for the building some of these means of saving life. Extension-ladders, scaling-ladders, possibly a chute, and some smoke-protectors should be kept ready for use in emergency cases in every theatre.

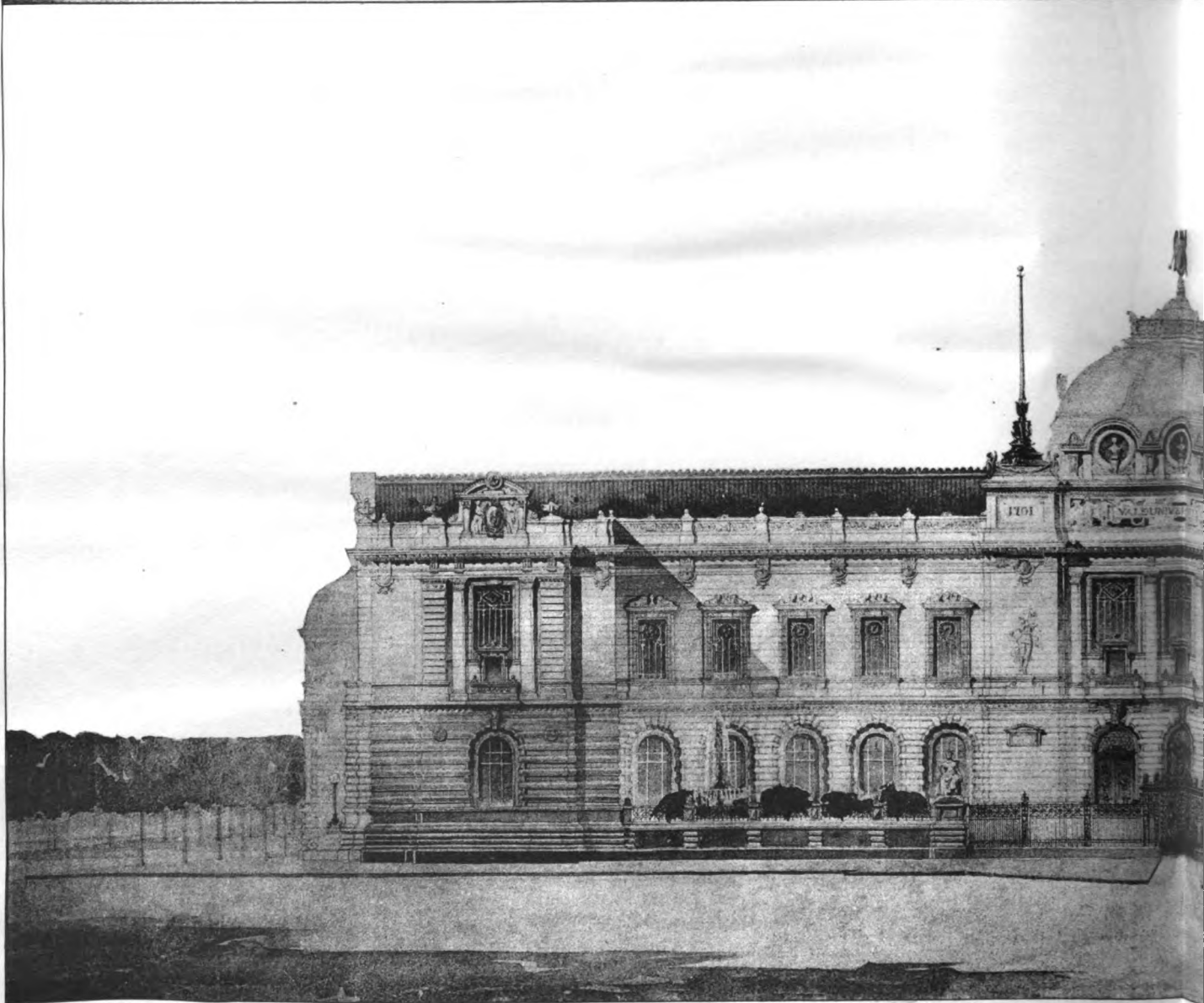
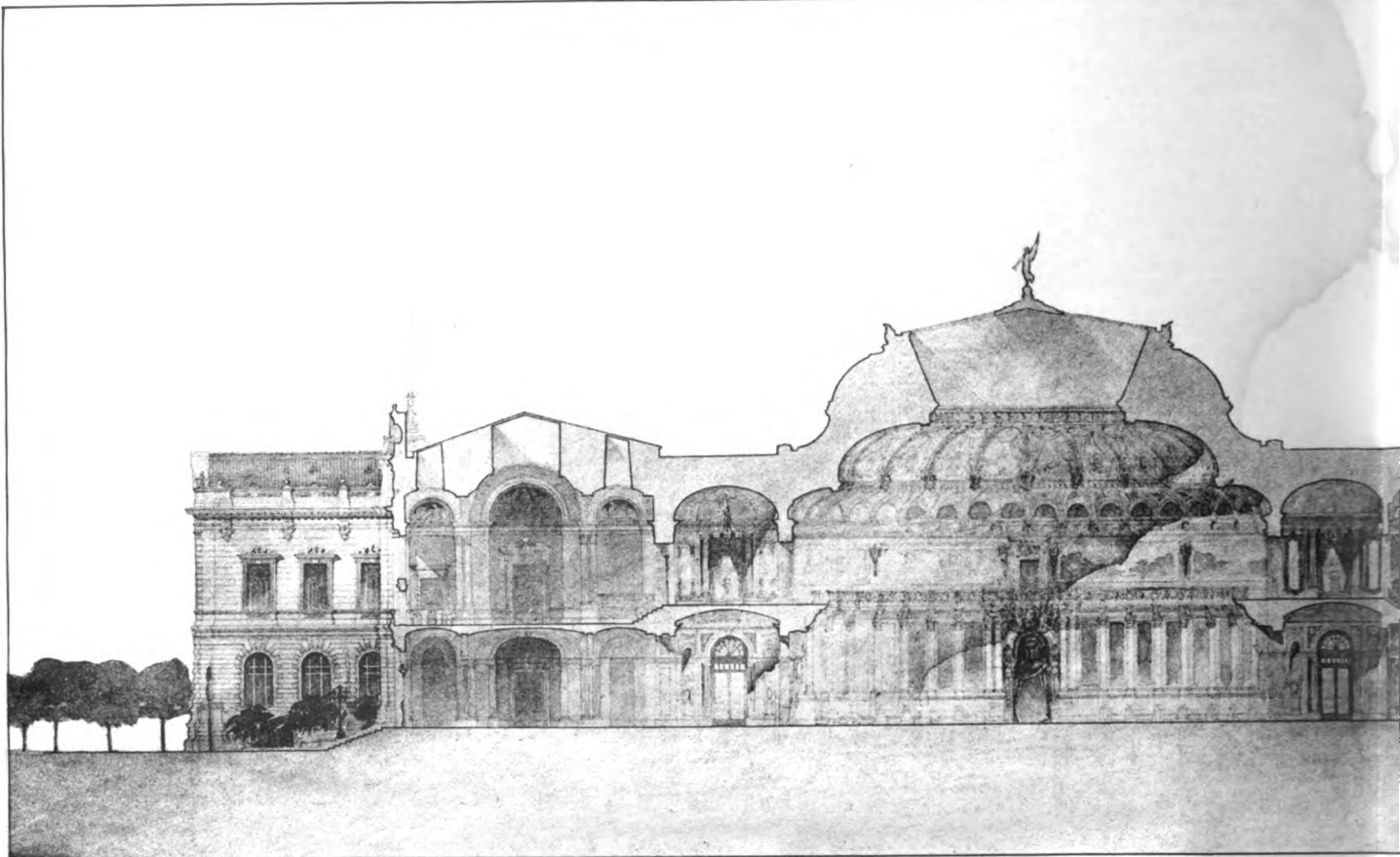
7. MEANS FOR FIGHTING OUTBREAKS OF FIRE.

Notwithstanding the assertion made in the first part of this paper, that the safety of the persons in a theatre is much more important than the safety of the building, it is necessary that every theatre should be provided with some means for fire-extinction, and particularly such as are useful in extinguishing fires in their incipency. As such fire-fighting appliances, I would mention first the automatic-sprinkler system on the stage. This includes rows of pipes with sprinkler-heads, placed so as to command and protect every square foot of the understage, the stage proper, the fly-galleries, the rigging-loft, the engine and boiler room, the dressing-rooms of the performers, etc. They should be supplied from one or several roof-tanks of generous capacity, or from pressure-tanks in the basement, and these tanks should not be used for any other purpose, and must be kept constantly filled so as to be in readiness when wanted. The tanks are usually supplied from a large fire-pump in the engine-room. In addition, outside fire-department connections for the sprinkler system must be provided. The same fire-pump should be connected with the fire stand-pipes, of which there should be in every theatre at least four lines, viz, one on each side of the stage and of the auditorium. Larger theatres and opera-houses require a greater number of stand-pipes. There should be fire-valves on the stand-pipes at each of the floors, and each valve should have fire-hose of suitable quality, and of sufficient length, connected with it, and kept ready for immediate use.

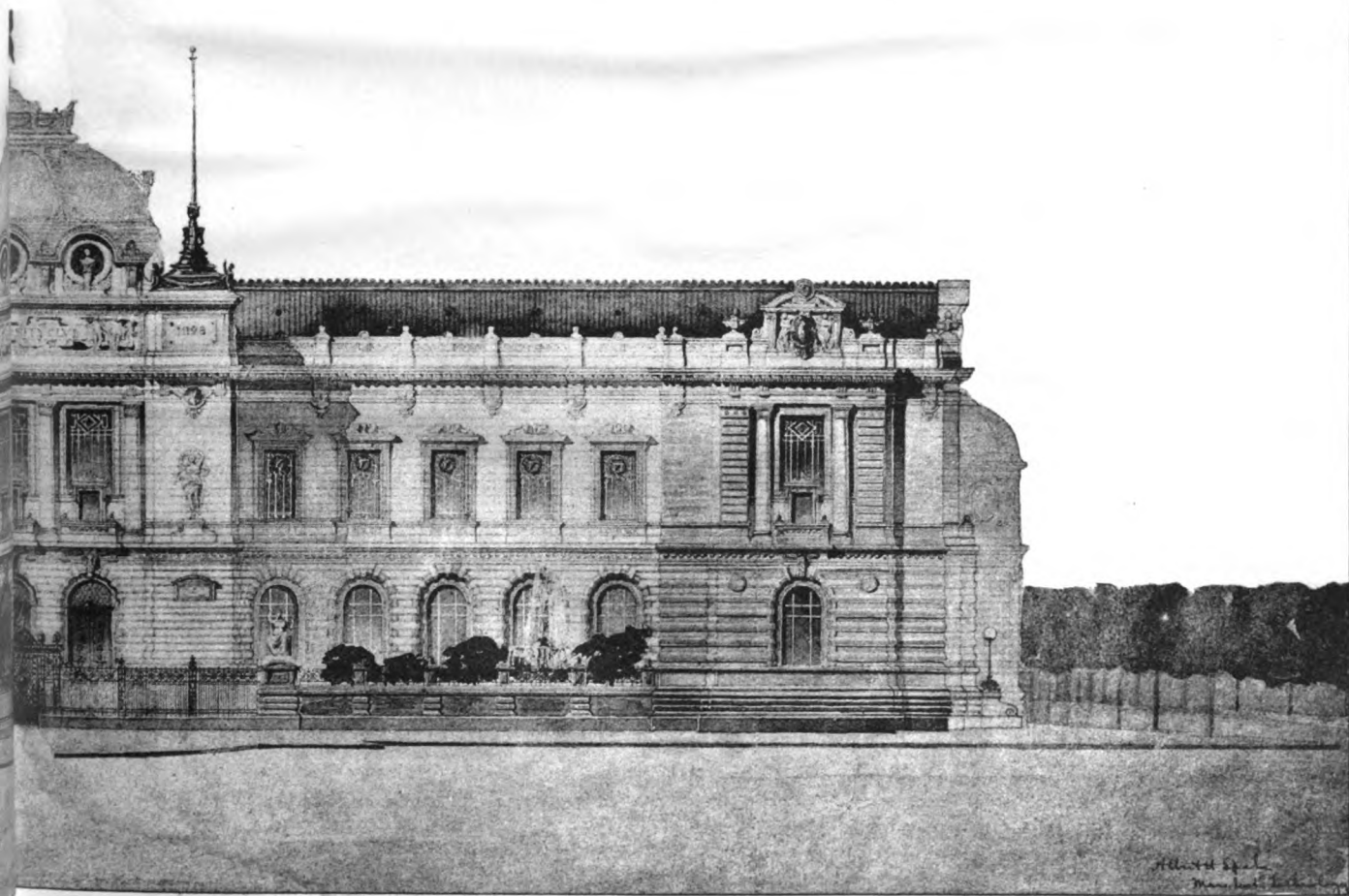
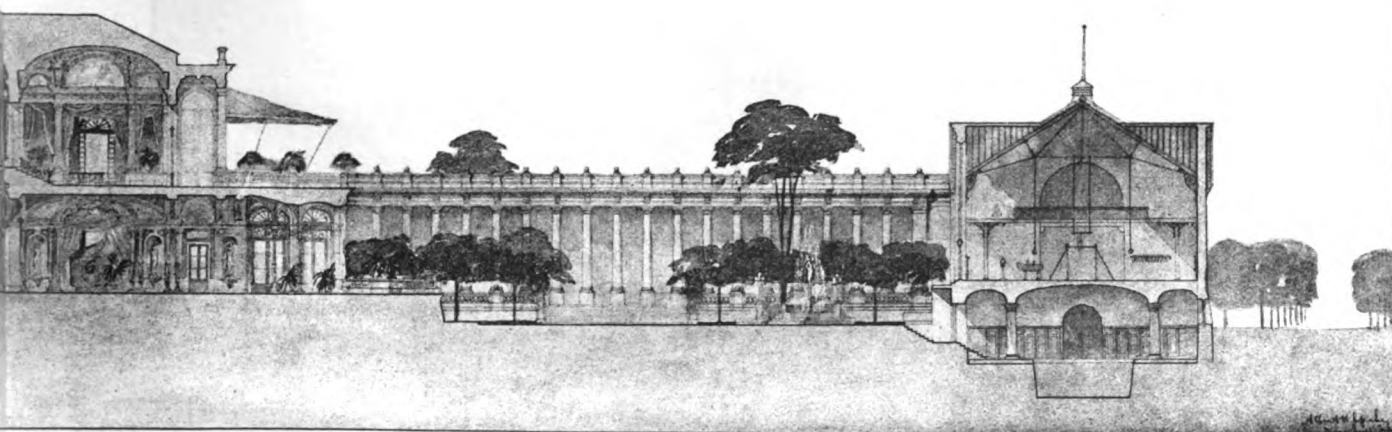
Beside this, there should be a large number of fire-pails, for these are even more useful than the fire-hydrants to put fires out when just started; also small hand-extinguishers, chemical extinguishers and large casks of water to refill the fire-pails.

There should be, on the stage, in the fly-galleries and in the rigging-loft, a full complement of fire-axes, picks, pole-hooks, brackets, saws, hatchets, crowbars, safety-lanterns, torches, or electric-candles, and an assortment of portable ladders, also some wet blankets.

There should be, in the stage-house, a general fire-alarm, operating automatically, and the theatre should be in telegraphic and telephonic communication with the nearest engine-house, with the police-station, with the fire-headquarters, each of these to have a separate and direct wire-connection with the theatre.

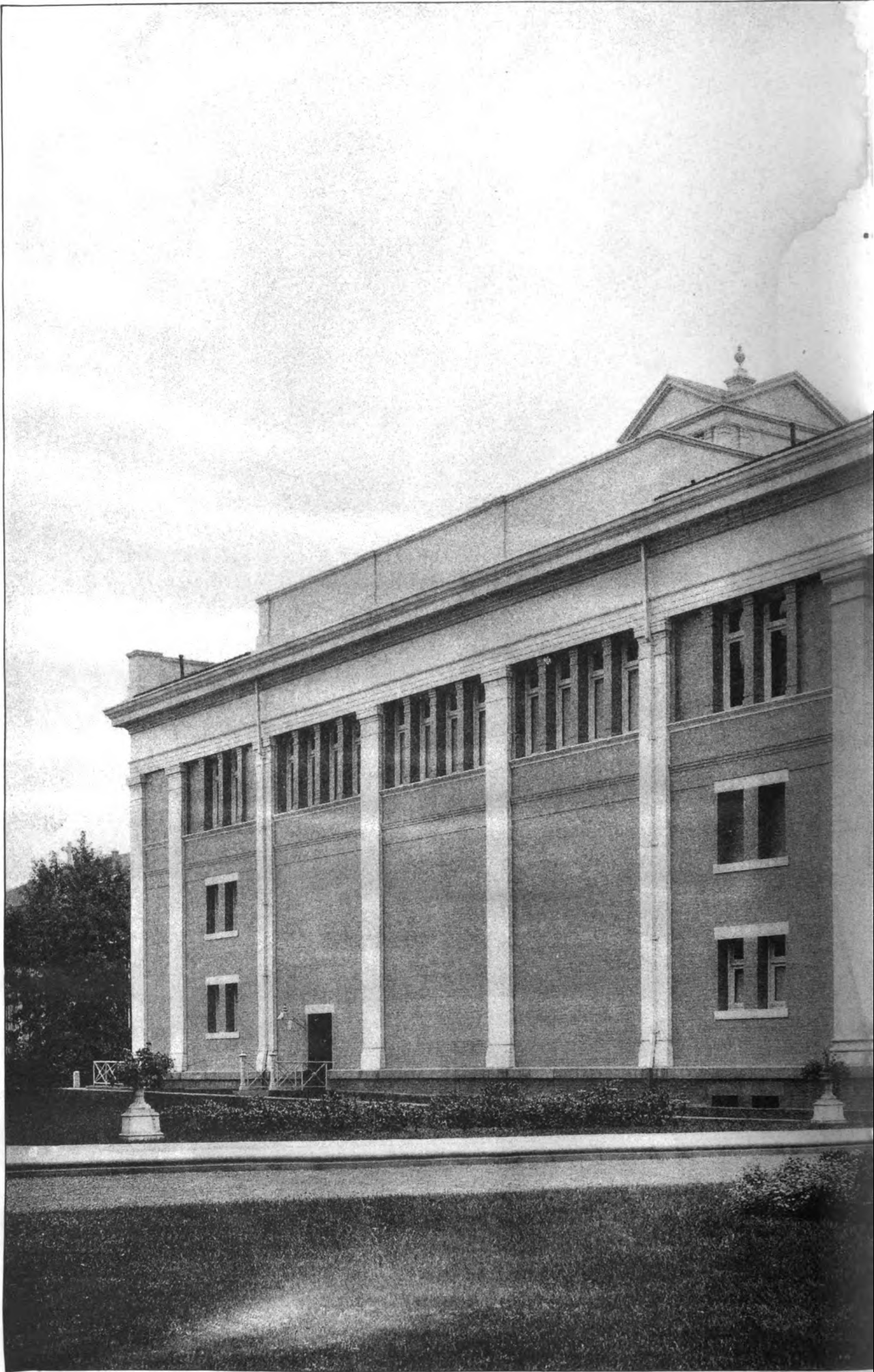


GOLD MEDAL DESIGN FOR A
ALBERT H. SMITH

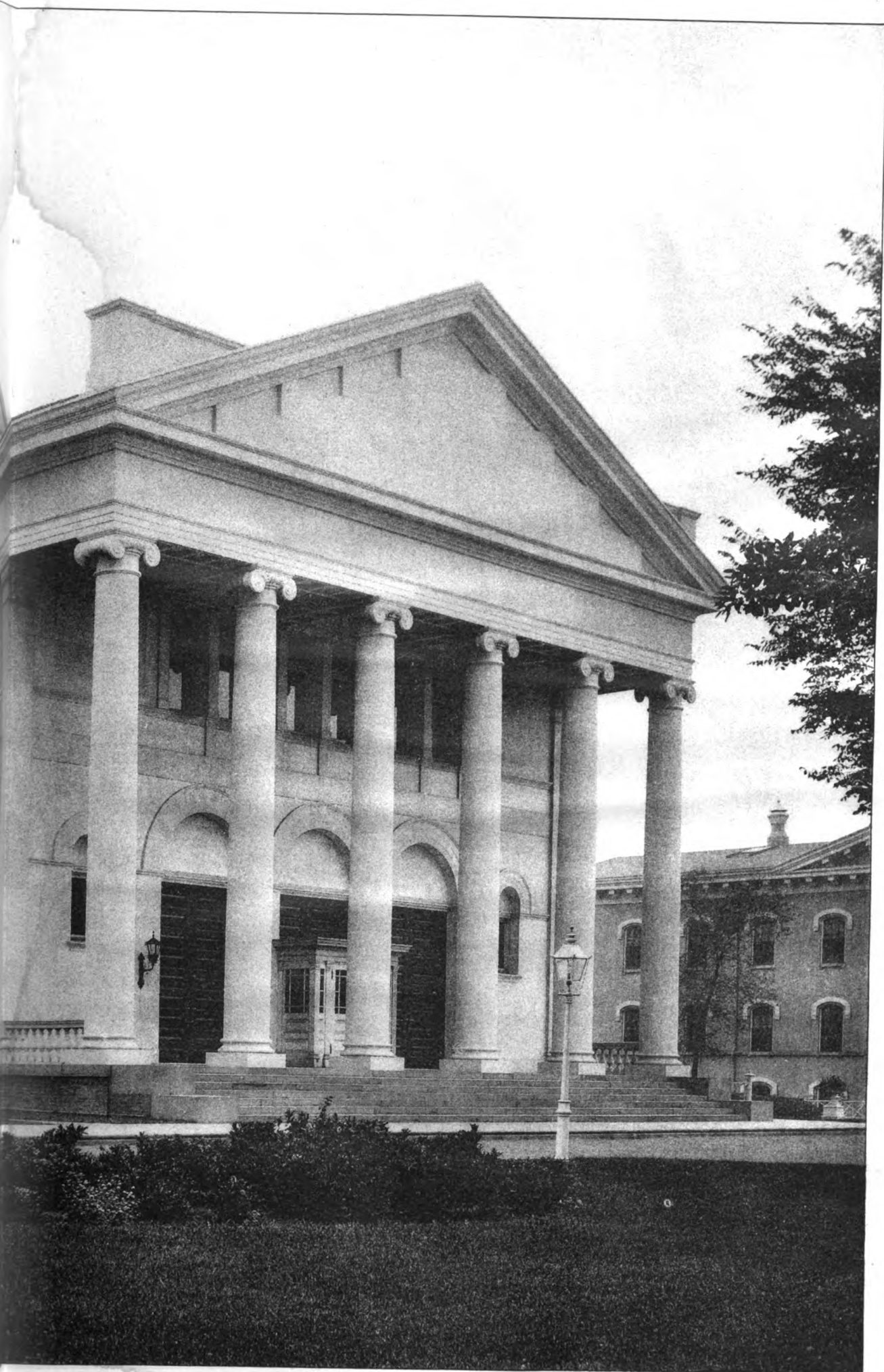


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It has already been said that every theatre should have a fire-brigade composed of its stage-hands and men of the manager's staff; furthermore, during the performances there should be a special fire-watch, composed of experienced and trained firemen of the regular fire-department.

The management should order frequent inspections of all fire-extinguishing appliances; it should issue special rules regarding the non-use and the frequent filling of the fire-pails; it should provide an electric-float indicator from the roof-tanks, indicating in the engine-room and also in the manager's room how much water the tanks contain and when they are empty.

8. MEANS TO GUARD AGAINST PANIC.

All the measures discussed so far have had in view the contingency of an occurrence of fire and the prevention of fire-outbreaks. It was, however, explained that one of the gravest dangers to be feared was the occurrence of a panic among the audience, caused by an alarm of fire. The alarm of fire may be real, or else, as frequently happens, it may be only a false alarm; in either case a dangerous stampede, jam and crush may result. Moreover, it must not be overlooked that there are many causes or disturbances other than fire which may precipitate a panic. This something causing a panic may happen in the best-planned, best-equipped and most-safely constructed theatre just as well as in the most wretched and inflammable structure. It is of the greatest importance that everything which may tend to cause a panic should be avoided, as the result would usually prove as dangerous or fatal to the theatre-public and the artists as an actual outbreak of fire. The best system of fire-resisting construction, the best system of watching by trained firemen, the most careful inspection by experts and specialists cannot prevent the outbreak of a panic when there is only apparent, but no actual, danger.

It is well to study the possible causes of a panic not less than the causes of fires, for some of them, at least, may be avoided. Panics in theatres may originate either from imagined or suspected dangers—caused by malicious alarms, by misunderstandings, by fright, or by some cause trivial in itself, or else they arise from actually present and often visible dangers, fire, stroke of lightning, etc. The danger is aggravated by the fact now well known to many theatre-visitors that it requires but very few minutes in a burning building for the smoke and fire-gases to suffocate people. This explains the terror, the wild fright, the haste and confusion, the loss of both courage and presence-of-mind, the dangerous stampedes, the mad struggles at the exit-doors, the trampling to death and the jam following a panic. In such dire moments the instinct of self-preservation often drives people even to kill one another. Many of the older theatres have insufficient stairs, exits and passages, and the result is that feeble or frightened persons may, in case of a sudden rush, stumble or fall when pushed and cause those who follow them to fall over them.

To say that there are no measures which will effectively prevent a panic is not correct. In my judgment, much can be done to prevent dangerous panics by giving the audience a feeling of security, and this they are bound to get, at least in some measure, when they know that the theatre is well planned and that there are at all times available plenty of wide, free and unobstructed exits and fire-stairs, enabling the entire emptying of the theatre in less than four minutes; when they know and see that overcrowding and obstruction in the aisles are not tolerated, that the management does not sell a larger number of tickets of admittance than the theatre-license permits, that no standing-room or camp-chairs in the aisles are permitted; when they are kept informed of the systematic and periodic inspections, and are told that there are nightly fire-watches, particularly when dangerous spectacular plays are given, and that the attendants are instructed in their duties in case of fire and that there are frequent fire-drills. This feeling of comparative security is also fostered by the knowledge that there is a fireproof proscenium-curtain in actual use, that the stage-roof is provided with ventilating-skylights or smoke-flues, that there are well-built fire-walls separating the auditorium from the stage, and that the electric incandescent-light is used to light up the scenic decorations.

The best preventive of a panic is, doubtless, the knowledge that there are more than ample facilities for direct and quick egress from all parts of the house. Therefore, for panic not less than for fire, the theatre-exits and the clear planning are the two all-important requirements which must be fulfilled irrespective of all other safety-measures.

Other measures which the management may institute and which will surely be helpful are the printing of the exits on the theatre-programmes, the hanging-up of clearly-printed plans in the foyers and vestibules, showing the plan of the building and the nearest exits, the lettering of all exit-doors in large, easily-read letters, the nightly use of all exits, the maintenance of plenty of light in the exit passages, stairs and courts, and instructions to theatre-ushers about directing the audience to the nearest exits. Inasmuch as a sudden and unannounced darkening of the auditorium may scare nervous people and thus may precipitate a panic, it should not be practised except it is prominently announced either in the theatre-programme or from the stage.

A safety-measure which has been mentioned under a former heading, and which is also important to prevent panic, is to provide every theatre with lightning-rod protection.

CONCLUSION.

Summing-up what has been said in the preceding pages, the following are the principal measures in the interest of safety of the persons in a theatre-building, which should be carried out, irrespective of whether the theatre is a new or an old building:—

1. Free or isolated site.
2. Open courts on the sides of buildings located in a block.
3. Clear planning.
4. Plenty of wide, unobstructed exits; doors opening out; separate lighting of stairs, passages and exits.
5. Fire-walls between auditorium and stage, and between stage and dressing-rooms.
6. Fireproof curtain.
7. Stage smoke-flues or ventilators.
8. Electric incandescent-light in place of gas-light.
9. Impregnation of all woodwork; scenery, decoration and gauze dresses.
10. Fire-watch and inspections.
11. Lightning-rod protection.
12. Automatic-sprinkler system.
13. Maintenance of fire-extinguishing apparatus in readiness.
14. Means for instantly signalling outbreaks of fire.
15. Rules of management; control of theatres by municipality or building-department.
16. Fire-resisting construction.

A careful review of the numerous propositions made to secure the safety of theatre-audiences and the stage-personnel shows a tendency to lay altogether too much stress upon fireproof-construction. To Mr. Sachs, I believe, belongs the credit of having pointed out very clearly and conclusively that the relative order of importance should be somewhat changed, viz, good planning should come first, next efficient and constant watching, then careful and frequent inspections, and, lastly, fire-resisting construction. After all that I have said, it is not necessary for me to explain why fire-resisting construction is the least important of the four items, when we have in view the safety of the persons in the theatre.

Wherever theatre-regulations are enacted, the compliance with them should not be left to the voluntary choice of theatre-owners or managers, but should be made compulsory. The municipal building-department of every city should have the fullest possible power to examine the plans for all contemplated theatres, and also the plans of alterations intended to be made in existing theatres. These should either be altered to meet the requirements such as are outlined in this paper, or else they should be closed by the authorities.

It has been well said that "the problem of building a safe theatre is one where a combination of architectural and engineering talent is required. Each specialist, to solve his special problems, must take the technical resources of our age into account, and bring them to bear on the question."

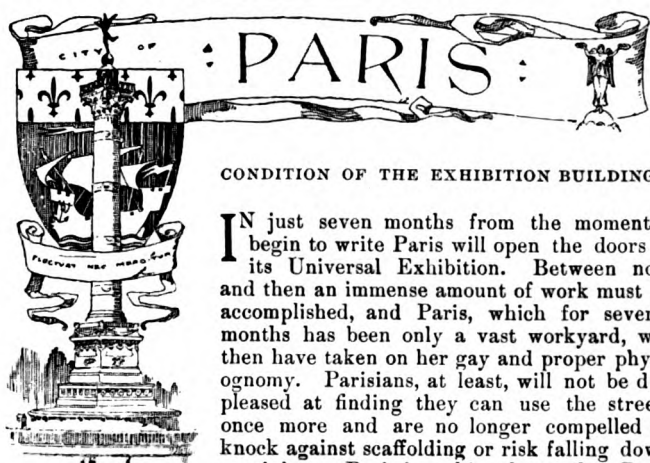
No other class of buildings bears so much evidence of the modern tendency to specialization. For the successful planning and designing of a modern theatre-building the architect should have associated with him a number of specialists or experts. The architect himself prepares the plan of the building and the design; he should have the general superintendence of the entire work, and should consult with, and direct, the other experts, so that a harmonious working together, so necessary to avoid clashes or mistakes, will result. The architect should also have charge of the interior arrangements and equipment, and he should plan in particular the decorative schemes of the auditorium, the ceiling, the proscenium-boxes, the foyers and vestibules, the entrances and façades, the seating-arrangements, the lighting, the sight-lines, the acoustics, etc.

The services of the constructing-engineer are required in difficult foundations, in the iron-construction, the roof-construction and for the design and details of the iron fire-curtain (where this is used). A heating and ventilating engineer should design and superintend the heating-system, the steam-boiler and the power-plant, and the engines for running the exhaust-fans or blowers for the ventilation of the theatre. An hydraulic-engineer will have charge of the water-supply system for house-use as well as for fire-protection; he will lay out the automatic-sprinkler system, provide the fire-pump, the fire-hydrants and fire-valves, and possibly the hydraulic-presses for the stage-machinery. A sanitary expert will design and carry out the entire drainage-system of the building and the plumbing arrangements; he should lay out the arrangement of the public and other toilet-rooms, and in general look after the ventilation and sanitation in the theatre. A gas-expert will specify and plan the gas-service and lighting-system, the details of the stage gas-table, and provide the gas-light fixtures. An electrical expert will have under him the entire electric-plant, the dynamos and switches, the wiring and lighting system, the fixtures, and possibly the electric stage-machinery. A chemist finally, will provide and advise on the fireproof treatment of the woodwork on the stage, on the chemical impregnation of the canvas decorations and scenery, the draperies, stage-furniture and of the costumes.

The higher conception of the function of the stage is that it should be educational in character, that it should form a moral and intellectual recreation for the people. A theatre ought to be a place where one goes to find motives for ideal thinking and where one's

thoughts are elevated above the realm of the commonplace everyday happenings. A great deal of real enjoyment may be derived from a good performance, for many matters combine to make a play at once attractive and educating, such as the sound and modulation of the human voice heard in declamation or in song; the idealized stage-figures clad in picturesque or historically-correct costumes; the ever-varying stage-settings which attract and please the eye; the rich blending of colors, the brilliant illumination of the stage-sceneries; all forming a rare combination of attractions in the field of fine-arts: painting, sculpture, architecture, poetry, music and rhythmic motion.

But in order to derive real enjoyment and pleasure from a stage-performance, certain requirements for the audience must necessarily be fulfilled. The people in the audience must be able to see and hear well, they must be seated comfortably, they require pure air, freedom from draughts, a moderate heat in winter, and the cooling of the auditorium in summer time; there must also be no bad odors of any kind, no dust, no disease-germs lurking about. Finally, most important of all, the audience must feel safe and secure beyond all doubt from the dangers of fire, smoke and a panic, and the players must be made equally safe. The last-named consideration, besides which all others dwindle into comparative insignificance, is of paramount importance, and I hope my paper has emphasized this fact in a sufficiently clear manner.



CONDITION OF THE EXHIBITION BUILDINGS.

IN just seven months from the moment I begin to write Paris will open the doors of its Universal Exhibition. Between now and then an immense amount of work must be accomplished, and Paris, which for several months has been only a vast workyard, will then have taken on her gay and proper physiognomy. Parisians, at least, will not be displeased at finding they can use the streets once more and are no longer compelled to knock against scaffolding or risk falling down precipices. Paris is making her toilet, Paris

is upside down. Almost all the tramway lines are being changed — tearing up the pavements and barricading the streets against traffic. The streets above the line of the Metropolitan Railway are here and there interrupted by yawning openings which give access to the subterranean galleries. The quais upon the left bank are one vast workyard, first, because of the work on the Orleans Railway and the new monumental station fronting the Garden of the Tuileries, and next because of the work on the Exhibition itself.

Upon the right bank, the Lyons Railway Station, wholly rebuilt, rears its immense scaffolds; and in front, the old Mazas Prison, recently demolished, is being replaced with a row of apartment-houses. On all sides we are preparing to receive our guests and to afford them easy means of circulation. In order to lodge them, new hotels are being built, and visitors who do not have to consider cost will be able to find a place in the Palace-Hôtel des Champs-Élysées, which covers an area of 3,000 square metres, and will contain all possible sumptuosities. Later I shall certainly have to revert to this luxurious structure — and a very artistic one it is, too, which does great honor to its architect, M. Chedanne. Of a more modest type, the Société des Wagons-Lits is just finishing, close to the Exhibition grounds, an immense hotel where travellers may be lodged and fed for a low price, and carried from and to the railway-stations. The idea is a very practical one. Another which is equally so is the fact that the structure has so been studied by its architect, M. Dauvergne, that after the Exhibition closes it can easily be transformed into an apartment-house and divided into apartments. And finally, Paris represents the aspect of an enormous ant-hill in the course of construction, to the great despair of people in a hurry, who find it very difficult to find free passageways.

As ever, the public follows with interest the works going on at the Exhibition grounds, and is much disquieted at noting how much there is yet to do. Surely the task is hard, but the present state of the work is sufficiently advanced to allow it to be affirmed that the Exhibition will open upon the stated date, April 15, 1900.

The Palais des Champs Élysées, in all that concerns masonry, carving and sculpture, is far in advance of expectations; but the metalwork is several weeks late. This delay is due to the fact that the great trusses of the Grand Palais have required serious studies which have had to be continued much longer than was thought necessary at first. The great staircase also had to be studied and the smallest of its details determined before the metal-work was ordered. Now all these portions of the work are being made ready and the architects promise to have the palace ready in the month of December. The credits granted for the construction of these two buildings reached the sum of 21,000,000 francs, but the authorities counted on certain rebates which have not been obtained and these figures will in all probability be exceeded.

The Pont Alexandre III will surely be finished before the opening of the Exhibition. Several weeks ago it was completely freed from the foot-bridge which was used for the erection of the arches, and which many of the profane took for the bridge itself. The pylons which decorate the entrance to the bridge will soon be finished and there only remains now to finish the purely decorative portions.

On the Champ de Mars and the Esplanade des Invalides, the palaces which are to shelter the different industries are being reared with rapidity. A large portion is already covered-in and glazed, and the façades in staff allow one to comprehend their very interesting and decorative silhouettes.

The Palace of Civil Engineering, on the Champ de Mars, and the one which fronts the Hôtel des Invalides, on the Esplanade, are decorated with great sculptured friezes, which are already almost entirely in place. The credits granted for the buildings on the Esplanade des Invalides were 5,570,000 francs, but the original schemes have undergone certain additions which have increased the cost by about 850,000 francs. In the same way, on the Champ de Mars, the original appropriation of 21,500,000 francs will be exceeded. The administration counted on receiving certain rebates which the rise in price of structural material and the mounting rate of wages have not allowed to be realized. To be perfectly fair, it must be acknowledged that on the Champ de Mars the Palace of Electricity and the Château d'Eau, which constitute the decoration for the background in front of the Machinery Gallery, are notably more behindhand than the others. In this quarter there is no time to be lost, and it is to be hoped that the winter may not be so severe as seriously to retard the work. Along the quais, between the Pont des Invalides and the Pont de l'Alma, the foreign pavilions are being rapidly built.

The United States pavilion will be surmounted by a dome 20 metres in diameter and measuring to its summit 51 metres from the floor of the pavilion. This pavilion has given cause for numerous negotiations. The American commissioners, Mr. Peck and Mr. Woodward, asked leave to erect a small bridge across the Seine in front of their national pavilion. The Exposition Commissariat raised difficulties, alleging that this bridge would injure the effect of the terrace which it was intended to build in front of all the foreign pavilions. But it seems that these obstacles were not insurmountable and the ministry is likely to accord a favorable answer. Another idea which has an attractively patriotic air was brought forward by Mr. Woodward, Assistant Commissary-General, last Fourth of July, at the banquet of the American Chamber of Commerce. It is known that on the Fourth of July, 1900, it is intended to unveil in Paris a monument to the memory of General Lafayette, offered by the American Government. It is, as Mr. Woodward said in his speech at the banquet last Fourth of July, "in the very heart of the City of Paris, in a spot consecrated by the memory of former times, within the historic bounds of the Palace of the Louvre, that the United States will erect a statue of Lafayette." Now on the day of inauguration, at the proper moment, by means of the cable, the President of the United States, in his office in the White House at Washington, will cause to be displayed from the top of the Eiffel Tower, and far above the City of Paris, the largest American flag which has ever been made. The American exhibit will not be limited to the national pavilion. It will have, like other nations, the space which is necessary in the foreign sections of the several palaces.

On the Trocadéro, the Colonial Exhibition is rearing a series of palaces and exotic pavilions which are charmingly fantastic. Also on the Trocadéro is found the Russian pavilion which is being built by Russian mechanics, whose tented camp is at the moment very picturesque.

Finally, on every side, about and in the immediate vicinity of the Exhibition, are being reared those structures which constitute the inevitable and necessary "attractions." First, there is the very curious and learned reconstruction of Old Paris, by the architect, M. Benouville, which occupies on the banks of the Seine and on piles over the river an area of 6,000 metres by 260 metres. It is a very interesting architectural restoration of the sixteenth and seventeenth centuries, divided into three different groups: First, the quarter of the schools (the Porte St. Michel, the tower of the Louvre and the Church of St. Julien des Ménétriers); second, the central portion, over which rears itself the Chambre des Comptes of the sixteenth century, which disappeared during the conflagration of 1737; third, the Pont au Change, dominated by some of the buildings of the Grand Châtelet, the palace with its grand hall, and the staircase of the St. Chapelle (seventeenth century), the Rue de la Foire St. Laurent, and the tower of the archbishop's palace.

The learned and architectonic side of this restoration, already finished and most picturesque in form, will surely not have much effect on half the visitors to the Exhibition, who will only remember that in "Old Paris" they found the bars and cafés, the restaurants and the theatres. On another side, near the Machinery Gallery, is building the Swiss village, with its chalets and farm-houses on real mountains; that is to say, on fictitious mountains built by carpenters but clothed with real earth, in which real trees and shrubs are planted. For this corner of the Exhibition a sure success may be predicted. Then, there is the great wheel, which already for several months past has been revolving for Parisians, who don't seem to be much inclined to patronize it for the present. Then there is the "Tour around the World," by the painter Dumoulin, which also will

certainly be a great success. This is an immense panorama, showing all the countries in the world, of which the foregrounds will be animated; that is to say, made lifelike by natives of each of the countries represented, who will give the public a notion as to the manners and customs of these countries. In the mareorama of M. Hugo d'Alési one can procure the complete illusion of a sea-voyage, for one will see unrolling before his eyes the seacoasts of different countries without any more serious danger than the liability to seasickness, — which may be for him a very real experience and so complete the desired illusion. There is no need of speaking of the numerous theatres which will find space on the banks of the Seine near the Champs Elysées, which will make this portion of the Exhibition the most truly Parisian of all.

But a Universal Exhibition addresses itself also to visitors of a serious turn of mind, who come to take note of the march of progress in Art, Industry and Science. For such visitors as these the committees of installation are earnestly working, and on this side there is no time to be lost. The exhibitors are many, too many, in fact, and it seems impossible to accommodate them all, even by reducing the spaces which they have demanded. It is true, however, that the bills they must pay have not yet been sent to them, and it is these bills which have always decided a certain number of them to give up their intention. But there is no need of fearing that there will be too many withdrawals, considering the great number of entries, for there will certainly be enough to occupy all the space. In most of the classes the plans of installation are on the point of being definitely fixed. In a general way, the architects are searching, in the matter of windows and decorations, for a modern note which will differ from that prevailing in 1889. The exterior appearance of the palaces will also be very different. In 1889, the architects made use of uncovered metallic framework filled with bricks, stucco or ceramic-work. This time the ironwork will hardly be uncovered at all, save in the interior galleries. The exteriors will accuse the architectural decorative compositions, which have great movement, with very varied silhouettes, but generally indicating a stone construction. The buildings will be white, and as all the palaces will have an upper story, the aspect will be, from every point-of-view, very different from 1889.

Now we are entering on the period for the liveliest work. We feel that the date of opening draws near, and it is earnestly to be hoped that political disturbances may not arise and put a stop to the last strokes. Justice should be done to our spirit of perseverance, which, in the midst of the effervescence caused by our unfortunate Dreyfus affair, has not allowed those who are laboring for our Universal Exhibition to halt for a single moment. In this particular spot there has never been a moment's hesitation or a useless discussion. "The affair" had no existence here; it was never talked about. Here they had only a single idea, a single end to achieve with calmness and confidence — the Exhibition of 1900.



ARCHITECT'S CHARGES FOR ABANDONED WORK.

ABANDONED Scheme. — At the Glamorganshire Assizes, at Swansea, on August 7, Mr. Justice Kennedy and a special jury had before them an action, *Wills vs. Chairman and Governors of the Swansea Technical and Intermediate School*, in which Mr. H. W. Wills, architect, claimed from the defendants certain fees for professional services in connection with proposed new buildings for the Swansea Technical and Intermediate School. According to the evidence, as reported in the *South Wales Daily Post* of August 8, the plaintiff was employed to prepare plans, etc., for the proposed new schools, his remuneration to be at the rate of 4 per cent on the sum expended, and 1 per cent for taking out quantities. The plans, as prepared in accordance with the instructions, were approved and adopted by the defendants. The estimated cost of the buildings amounted to £15,500, and the lowest tender was £15,516. The Charity Commissioners, to whom the scheme was submitted, refused their consent to it, on the ground that there must be two buildings, one for technical and one for intermediate education. Mr. Wills was then requested to make new plans and invite fresh tenders for two new buildings. This was done, and tenders were obtained — £4,739 for the intermediate building and £8,162 for the technical, making a total of £12,900. The new schemes were submitted to, and passed by, the Charity Commissioners and the Local Government Board. The defendants then became aware that certain clauses in their leases made it impossible for them to carry out the proposed buildings, and the schemes had consequently to be abandoned. There was a question as to the amount of the remuneration originally agreed upon, the plaintiff claiming £692 4s. 4d. in the event of his fees being found to have been fixed at 5 per cent commission and 1½ on the bills of quantities; or £551 2s. 1d. should it appear that the agreement was 4 per cent and 1 per cent respectively. The sum of £250 had been paid by the defendants before the action was brought, and the balance now sued for was £442 2s. 4d., or £301 12s. 1d., according to the finding as to the exact agreement between the parties. The Judge intimated during the hearing that on the evidence the claim must be limited to the lesser sum.

Mr. Edwin Seward, giving evidence as to the charges usual in the profession, stated that the charges for several of the items were rather below than above the regular charges. He had examined the drawings, etc., prepared by the plaintiff, and found that the work had been very ably done. Regarding the question of quantities, another architect-witness stated that the labor involved was practically equal to taking out quantities twice over.

For the defence it was contended that the claim was excessive. In the first place Mr. Wills had been told that the cost must be limited to £8,000; his plans, however, would have involved an expenditure of over £15,000.¹ The claim for the second new scheme was unreasonable; it was really one scheme, which had to be modified. Under the circumstances, as the building-scheme had had to be abandoned, the £250 already paid was ample remuneration.

His Lordship said he could not see what possible reason there was for defendants declining to pay, at any rate for the first set of plans. How could they blame the architect for producing an expensive scheme when they themselves approved of it and sent it to the Charity Commissioners? With regard to the second set, possibly they might consider that the alterations were not so great as to justify the whole claim. It was for the jury to consider whether they would award less than was claimed or anything at all for those plans.

The jury, without leaving the box, found for the plaintiff in the amount claimed, viz, £551 12s. 1d., less the £250 already paid on account. Judgment was accordingly entered for that sum, with costs.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

NEWTON CENTRE METHODIST CHURCH, NEWTON CENTRE, MASS.
MESSRS. ANDREWS, JAKES & RANTOUL, ARCHITECTS, BOSTON, MASS.

[Gelatine Print issued with the International and Imperial Editions only.]

ALTAR AND REREDOS FOR GRACE CHURCH, BALTIMORE, MD.
MR. HENRY M. CONGDON, ARCHITECT, NEW YORK, N. Y.

THIS structure, built of colored marbles, the principal portion being of white Echallon, the shafts of the altar being of St. Beaume, and those of the reredos of St. Sylvester marble, the bas-reliefs and statues of Kehlheimer stone from Bavaria, a stone similar to Caen, but much closer in grain and harder, as yet not much known in this country. The subjects of the altar reliefs are the "Sacrifice of Noah"; the "Offering of Melchizedek," and the "Sacrifice of Abraham"; that of the large relief in the reredos being the "Institution of the Holy Eucharist," flanked by the statues of "St. John the Baptist" and "St. Luke the Evangelist." Models for all the ornamental carving were made by the son of the architect, Mr. Herbert Wheaton Congdon. The work was done by the firm of Messrs. Peter Theis' Sons, of New York, and the sculpture by Mr. Joseph Sibbel, of the same city.

GOLD MEDAL DESIGN FOR A UNIVERSITY CLUB. DESIGNED BY
MR. ALBERT H. SPAHR.

This plate will, at the same time, serve to show the work accomplished under the training of the Architectural Department of the Massachusetts Institute of Technology, and the character of the design encouraged by the Society of Beaux-Arts Architects who awarded its gold medal to this design a couple of years since.

THE THEATRE: SAILORS' SNUG HARBOR, STATEN ISLAND, N. Y.
MR. R. W. GIBSON, ARCHITECT, NEW YORK, N. Y.

[The following named illustration may be found by reference to our advertising pages.]

THE NEW YORK "BOX-STOOP"—V: NO. 26 EAST 57TH ST.

[Additional Illustrations in the International Edition.]

INTERIOR OF THE CHAPEL: SAILORS' SNUG HARBOR, STATEN ISLAND, N. Y. MR. R. W. GIBSON, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

¹ Concerning this point, Mr. Wills writes: "Some very cardinal points are omitted from the published reports of the case, such as my explanation how the original estimate, £10,500, was increased to the actual tender, £15,516. I explained that when levels were taken and trial holes sunk, the cubic contents of the building were increased so materially that I had to report to the Governing Body that the cost would be at least £13,500."

PORCH OF PALACE OF THE LATE EMPEROR WILLIAM I, UNTER DEN LINDEN, BERLIN, PRUSSIA. KARL FERDINAND LANGHAUS, ARCHITECT.

[Gelatine Print.]

THIS palatial edifice, which for over fifty years preceding the late Emperor William's death served as the home of this potentate, is situated at the entrance of the far-famed avenue, "Unter den Linden," at Berlin, in close proximity to the University, the Royal Opera, and other notable buildings. It was erected between 1834 and 1836 for William, then Prince of Prussia, a plain soldier without any aspiration to the throne of the Prussian Kingdom, and his young consort, Princess Augusta of Saxe-Weimar, from designs by Herr Karl Ferdinand Langhaus, Jr. (1781-1869), the son of the architect of the well-known Doric triumphal gate, called the "Brandenburger Thor," at the entrance of the "Thiergarten." It is of interest to note that, while the great J. G. Schinkel, who was the acknowledged head of German architects, also submitted to his exalted patron several fanciful designs for a princely palace, Prince William, with that characteristic modesty and soldierlike simplicity that remained true to him through all his life, gave his preference to the design of the younger Langhaus, which was marked by a severe simplicity and nobility of proportions as well as of detail.

The two-storied structure, having a sandstone-front 200 feet in length, equally divided up between thirteen axes, is L-shaped in plan, and extends about two hundred feet back. On the open side of the L, the front of the palace is flanked by the old Royal Library building, standing at right angles with the former, thus forming a closed courtyard. The Emperor's Palace is generally considered one of the best examples of the severe Classicist tradition of the early Berlin school of this century. Although the shape of the building-lot was ill adapted for a building of this character, the planning is carried through with rare skill, and with a fine feeling for architectural effect, attained by well-chosen contrasts. The apartments intended for festive and representative purposes occupy the entire second story. The modestly-appointed suite of living-rooms of the late Emperor was located on the first floor, to the left of the central entrance, the end-room being his favorite sitting-room and study. It was from this end-window that Emperor William frequently used to show himself to the gaze of his devoted Berliners.

Regarding the architect, Herr Langhaus, Jr., it may be stated that on one other occasion in his life he had the good fortune to make a decided hit that secured lasting fame to his name. At the unusual age of eighty-five years, standing almost at the brink of the grave, he designed and built the beautiful Municipal Opera-house at Leipsic, one of the most successful Renaissance structures of its class, occupying a commanding site on the fine "Augustus-platz." Every tourist who visits this fast-growing city, with its more than four hundred thousand population, is impressed with the beauty of this composition, especially so with the charm of originality breathed by the rear-façade with its terraces and pergolas overlooking the small but pretty lake. The Leipsic Opera was completed in 1868, just one year before the master's death.

ENTRANCE TO CHAPTER-HOUSE: BRISTOL CATHEDRAL.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

COMMISSION FOR DISCARDED PLANS.

DETROIT, MICH., October 18, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—E. K., of Binghamton, N. Y., asks for light on a case which he states in your last issue, and you might refer him to a decision of the Supreme Court of New York State in the case of *Beardsley vs. Beyer*, rendered, I think, in 1898.

Yours respectfully, PENINSULAR.



THE SEA-WALL AT BARROW, ENG.—The sea-wall which is to be constructed at Barrow, Eng., will be valuable in a way that is not usually associated with such works. The Hodbarrow iron-mines are of great importance, the ore ranking first in quality, so far as English hematite is concerned, and being of wonderfully uniform quality. A decade ago a wall was made to keep the sea from the workings of a mine, and it is now proposed to make an embankment 6,750 yards long, to enclose about 170 acres of land, under which the mine will be extended, the existence of ore having been demonstrated under that area. It is estimated that the work will cost nearly \$3,000,000, but it will add much to the wealth of the already rich company of Hodbarrow.—*Boston Transcript*.

BOX AND COX OUTDONE.—A discovery of the Allegheny Bureau of Charities has aroused the authorities of that city. At one boarding-house of Hungarians in the Ninth Ward of the city were found sixty persons who cooked, ate and slept in three small rooms. The men have different hours at work, and five beds accommodate them all, turn about. This condition explains a number of diseases that prevail in the tenements.—*Philadelphia Press*.

AN OLD STORY WITH A NEW ENDING.—An expert told me of an experience he had once in an old junk-shop abroad, where a curious old chap had dozens of pictures hanging in an obscure and dingy building. As he entered the shop his eye caught what seemed to him a genuine Rembrandt. He was instantly excited, but concealed his emotion and began pricing every picture but this particular one. The prices varied from \$5 to \$15, and when they reached the Rembrandt the old dealer said: "There's a picture wot cost me \$25; wot you give for him?" The expert thought he was safe in suggesting \$50, whereupon the old man came up close to him and shouted in his ear: "Why, you darned fool, that's a Rembrandt, and I want \$25,000 for it." This picture actually sold for \$12,500, and is owned in this country at present.—*The Art Collector*.

STONEHENGE A SUN-DIAL.—An attractive solution of the purpose of Stonehenge was put forward at the British Association recently. Dr. Alfred Eddowes, addressing the Anthropological Section, advanced the theory that the building was a gigantic sun-dial. The thirty great upright stones with their intervals showed, in his opinion, that the circle was divided into sixty equal parts, the grooved stone having been used for supporting a pole, which formed the pointer of a sun-dial for daily observation, or an indicator of the time of the year by the length of the shadow. Dr. Sebastian Evans, who presided, held that Dr. Eddowes had proved his point, that Stonehenge had been used as an observatory; but Mr. Arthur Evans protested against the attempt to introduce very precise and rigorous ideas into a rude monument, and contended that Stonehenge, which was on the site of an early Bronze Age cemetery, ought not to be regarded alone, but in relation to a large series of other stone monuments. One would like to know what is the date or period to which the oldest authentic sun-dial can be attributed.—*London Spectator*.

DISMAL SWAMP CANAL.—The famous Dismal Swamp Canal, which waterway was originally surveyed by George Washington, was formally opened to navigation, October 14, and a novel procession of vessels went through, the United States torpedo-boat "Talbot" bringing up the rear. Nearly a thousand people from various parts of the country attended the opening. Nearly a million dollars was spent in reconstructing the canal, which is to meet the demands of modern traffic and as a connecting link furnishing an island waterway from the Chesapeake Bay to Albemarle and Pamlico Sounds. It is expected to revolutionize the carrying business in the section traversed, furnishing a cheap mode of transportation, the carrying of freight in barges towed by the tugs. This system is successfully operated from Norfolk along the North Atlantic Coast, but the South Atlantic Coast is deprived of this mode of transportation, owing to the danger of Cape Hatteras, which makes it impossible to handle barges in this manner. By following the canal-route Hatteras is avoided. The canal extends from Deep Creek, near Norfolk, to Pasquotank River, North Carolina; is 22 miles long, 10 feet deep, and 80 feet wide. There are only two locks, one at each end of the canal.—*N. Y. Evening Post*.

A SINGULAR RUSSIAN DRAWBRIDGE.—Bridges of various character, movable in different ways and used over navigable channels have been described in these columns from time to time, together with the means used in their operation. One of the oddest which has come to notice is one on the Nicolas Railway in Russia, which is believed to be unlike anything existing in this country. The stream spanned has a width of only about thirty-three feet and in this country the bridge erected would probably have been a single bascule with rolling counterweights like some recently erected on the Erie Railroad, or of the rolling-lift type like those installed just outside the new Southern Terminal in Boston. The bridge under description is for two tracks and the span for each track is composed of two independent parts, one consisting of a carriage like a transfer-table in general plan and the other is a rolling or retractile bridge. This plan has the disadvantage of necessitating an abutment nearly twice the extent of the width of the stream and wide enough for four tracks. Beginning the description at the shore-end of the side from which the bridge is operated, the tracks are first laid upon a movable section of a length equal to the channel-span. This section, which is independent for each track, is carried on wheels moving on rails laid transverse to the axis of the bridge. Connecting with these sections are two other sections, one for each track, carried on plate-girders a trifle less than twice the length of the channel-span and these sections are carried on trucks moving on rails laid in the direction of the length of the bridge. The shore-end of the rolling-part of these sections is shorter than that which covers the stream, and it is accordingly counterbalanced by the addition of weights. In its closed state the bridge and the carriages rest upon fixed supports and may be considered as rigid structures. When opened to allow of the passage of boats the first movement is made by forcing the points carrying most of the weight by raising them to a certain height by means of a special mechanism consisting of a combination of an eccentric gear and an endless screw. The two shore-sections are then moved aside right and left until they occupy positions parallel with their original ones and distant therefrom the width of one track, or sufficient to allow the channel-part of the bridge to be retracted. The rolling-part projecting over the channel is then moved back upon its own axis, occupying the space vacated by the shore-section which had been moved laterally aside. The bridge is protected by special electrically-operated signals.—*Providence Journal*.

Entered at the Post-Office at Boston as second-class matter.

NOVEMBER 4, 1899.



SUMMARY:—

The New York Custom-house Competition Award.—The Tarsney Act in Danger from Politicians.—The Enactment of the New York Building Code.—Effect of Newspaper Discussion on Art Interests.—The Matter of Labels in Art Museums.—A New Granite in the Market.—Rejected "Attractions" for the Paris Exposition.—The Closing of the Chapel Royal at Versailles.	33
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A WEEK or two ago a great tea-merchant showed the world how gracefully an honorable man, even if absolutely self-made, may fill the rôle of the thorough gentleman in the face of severe disappointment and costly defeat. There can be no doubt that in future contests no competitor will be more welcome to the inaugurators of such contests than he who has showed a loyal willingness to abide uncomplainingly by the conditions. About the same time another contest took place, in which architects were more than ordinarily interested, and the decision was announced perhaps the same day; but, if rumor is to be believed, the vanquished have not all been prompt in showing to the victor the courtesy the occasion demanded, and in place of loyal acceptance of the decision some have showed such a disposition to object to it that it is not unlikely that those who initiated the contest may think twice before they embark on a second one. It would be a grave misfortune if the first really important competition under the Tarsney Act, that for the New York Custom-house, should eventuate in the same sort of fiasco that resulted from the Pennsylvania State-house competition, and it would be all the more serious because many of the competitors have been prominent in their endeavors to persuade the Secretary of the Treasury to give the law as it stands a fair trial. A fair trial—up to the time of the announcement of the decision—the law has had, and for any of the twenty competitors, who submitted their designs in acceptance of all the conditions of the contract, to protest against a decision made in full consonance with those conditions should place them, if not in the ranks of professional outlaws, at least on the black-list of the Treasury Department. To all, it should be most clearly obvious that any, even the most shadowy, disposition to question publicly the decision of the appointed committee would tend to put in jeopardy the good work which after long effort has been accomplished in bringing the Tarsney Act into actual operation. In all competitions under this Act the most scrupulous and exact adherence to conditions and the most absolute loyalty of one competitor to the others will never be too strong a safeguard against the attacks of the ever-wakeful politician, to whom the present system is not only mysterious but abhorrent.

THE fact that one of the Senators from New York has already attacked the award and succeeded in getting Mr. Cass Gilbert's appointment held up, pending the examination of the charges he brings, shows what political action in such cases is likely to be, and how gladly advantage will be taken of any disposition that competitors themselves may

show to question the award. Senator Platt's "charges" are flimsy to rottenness, but in politics that does not much matter. It is true that Mr. Gilbert is a non-resident of New York, but the Government's contract is as binding with those of the non-resident competitors as with those living in New York. It is true that the accepted design does not contain a dome, but a dome is a matter of architecture, not politics, and a trained architect's opinion of domes is more deserving of heed than is that of a self-made politician. It is true that the members of the jury of award are not usually named as leaders in the profession, but they are neither unknown nor untrained, and they are fully the peers of some of the competitors the Government was willing to invite to submit designs, and they were selected from a list of names suggested by the competitors themselves. More than this, they are known as honorable men, and it would nowadays be difficult to find a jury to sit on the work of twenty "leaders of the profession" who had not earlier had professional or business connection with those leaders. It is, since a political protest has been made, particularly fortunate that the jury insisted on a simple and full performance of the stated conditions, and did not allow, as some newspapers alleged that they did, a second competition. If Mr. Gilbert is deprived of his appointment solely by political manœuvring, that will be a matter to be regretted of course, but the disaster will be largely a personal one; while if he loses it because of any breach of loyalty and good faith on the part of his fellow competitors, such as occurred in the Pennsylvania case, the disaster will be woeful indeed, since it will tend to establish in the minds of the Government officials the belief that it is undesirable to do business with private practitioners and will surely bring about the repeal of the Tarsney Act. Mr. Gilbert himself and, presumptively, Mr. Gilbert's design stand in no sort of need of a word of endorsement from us.

THE new Building Code for the City of New York, which has been severely criticised by the profession, has been signed by the Mayor, and is now the law of New York. It would appear from the discussions that the provisions most criticised are those which allow the Building Commissioner to waive or modify almost any of the rules of the Code. Even in regard to the bearing-power of soils, after specifying the maximum load to be placed on sand, gravel, clay and other soils likely to be found in New York, the Code says that the Building Commissioner shall have power to vary these restrictions; and most of the limitations of this kind fixed by the Code may be nullified in the same way. There is, undoubtedly, much to be said in favor of giving a large discretion to Building Commissioners, to enable them to deal advantageously with the novel and unforeseen conditions which are continually occurring in building operations, but it is by no means advantageous for honest architects and builders and real-estate owners, who have carried out building operations strictly in accordance with the law, to find that their competitors have been able, by misrepresentation or otherwise, to influence the Building Commissioner to set aside the law for their benefit, so as to enable them to save a large portion of the cost of their construction; and with a Commissioner open to political or financial corruption, building methods in New York might become far more scandalous than they are now.

IT is a great satisfaction to see the increase of discussions in the newspapers in regard to artistic matters. It is true that the communications and editorial articles do not all show a profound knowledge of art, but they at least show an interest in it, and public interest is the forerunner of public appreciation of art, and, as an inevitable consequence, of high artistic achievement. The best artist cannot accomplish much in an atmosphere of misunderstanding and neglect, while even inferior ones can do something to give pleasure to persons who encourage and appreciate them; and the sooner the Athenian disposition to study, compare and criticise works of art becomes general in this country, the sooner we shall have American Phidias and Zeuxises, devoting themselves to winning what will then be the greatest of prizes, the intelligent applause of the American public. Some of the criticism already begins to take an Athenian cast; as, for instance, a sharp attack on the National Sculpture Society, called out by an answer of

the Secretary of the Society to an observation of Governor Roosevelt, or some clever letters to the Providence newspapers in regard to the statue which it is proposed to place on top of the Rhode Island Capitol. Of course, we do not pretend to enter into the merits of such discussions, which relate to facts which only those on the spot can fully understand; but it should be a consolation to the supporters of both sides to reflect that all these disputes, sarcasms and recriminations lead people to look at the works to which they relate, and increase their interest in them; and in this way prepare the community for the intense enjoyment of good art which can alone call out the best efforts of the ablest men.

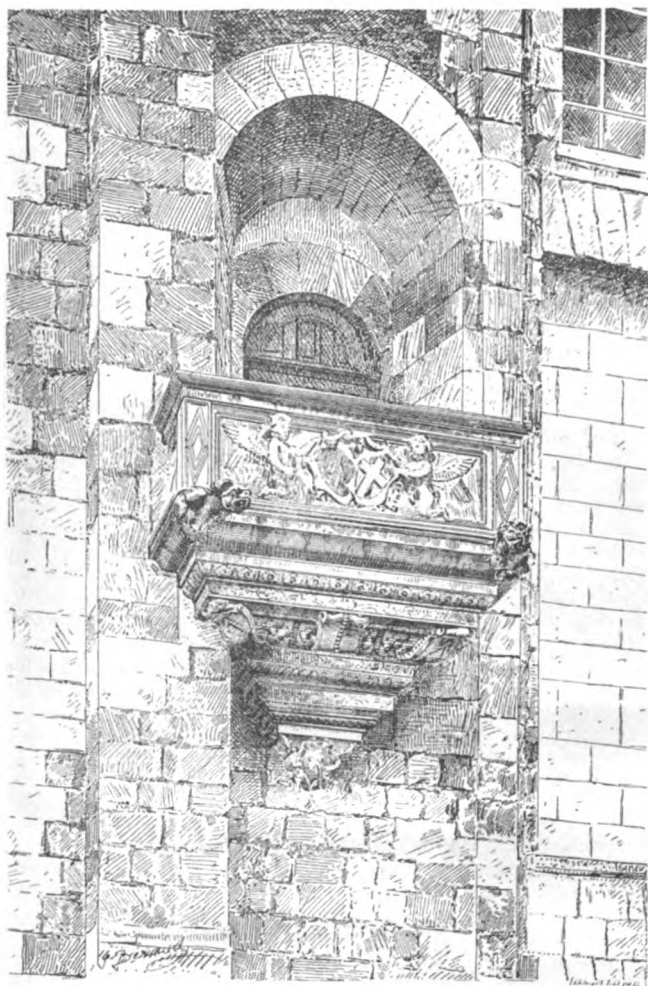
AMONG the victims of the newspaper discussions, the Boston Museum of Fine-Arts is, just now, the worst sufferer. We have before mentioned the letter of its Curator, Mr. Benjamin Ives Gilman, in reply to a criticism of the Museum authorities for not putting more ample labels on their pictures, in which he expressed the opinion that museums of fine-art existed for enjoyment only. This rather unfortunate expression immediately called down on him a storm of more or less unnecessary wrath. The editor of the Boston *Herald*, in a fit of virtuous indignation, hinted that no more bequests or gifts could be expected by an institution which took such a view of its duties as a means of education; and the Rev. William C. Winslow, the American representative of the Egypt Exploration Society, commended the remarks of the editor of the *Herald*, saying that the Egyptian antiquities in the Museum, many of which were procured for it through his efforts, are, as yet, labelled very imperfectly, or not at all. This is, of course, a real misfortune, which must undoubtedly be attributed to the inability of the small Museum staff to keep up with all the work imposed upon it; but it should not be confused with the question of the proper method of labelling, or otherwise describing, objects mainly of artistic interest, as distinguished from those, such as the Egyptian antiquities, which have little or no beauty of form or color, but are of great importance in explaining the life and customs of a people whose history grows daily more interesting. Every detail of origin and relationship is of value in regard to such objects, and, while most information of this kind must be given in catalogues, the labels may well contain as much as can be condensed within the space available. With pictures and statues, the value of which lies in their artistic merit, the case is altogether different. Mr. Gilman explains, in a later letter, that what he means by the "enjoyment" of a work of art is the communication, from the mind of the artist, through the medium of the picture or statue, of an intense, and, therefore, a pleasurable, emotion; but his explanation is rather too philosophical for the average newspaper reader, and it would have been better if he had said in the first place that the works in the Museum galleries had an educating influence of the highest and rarest kind upon the hearts, as distinguished from the intellects, of visitors, and that it was of importance to avoid disturbing the spiritual impression produced by a noble work of art by unnecessary and importunate appeals, through the medium of labels, to the lower faculties of the mind. It is, no doubt, desirable for the student to know all that he is willing to learn of the history of schools of art, and any person who has had an opportunity to study Italian painting will find his pleasure in it enhanced by knowing something of the lives of the artists, and the circumstances under which they painted, and by having his attention called, for example, to the decorative symmetry of pre-Raphaelite composition, and the transition, through Raphael, from this to the naturalism of the later painters; but all this is matter for the catalogue, not for the labels, which should be so treated as to distract the attention of the visitor, let us say, to the Tuscan room as little as possible from the angelic beauty of the faces in the groups of Ghirlandajo and Luca Signorelli, or from the still more subtle loveliness of line and color in the pictures of Fra Filippo Lippi or Mantegna, leaving him, after visiting the gallery, or before coming into it, to study whatever the catalogue, or Vasari, or Mrs. Jameson, may have to tell him about the painters and their works.

WE spoke some time ago of the possibility of using Labrador spar as a very rich and beautiful building-material, mentioning that it is said to exist in boulders in the interior of New York State, so that, instead of using it as an

inlay, as Mr. Jackson used it in the staircase of the Examination School at Oxford, it might be possible to obtain it in masses sufficiently large to be cut into columns. Since then, we have been shown samples of a granite, of mixed colors of black, green and white, containing a considerable quantity of labradorite, scattered through it in small crystalline masses, which glitter in the light with the characteristic bright blue sparkle of this beautiful mineral. The general color of the granite is a dark green, not very unlike that of Connemara marble, although more varied with white, but the brilliant sky-blue reflections from the crystals of labradorite, which show particularly on the curved surfaces, give the stone a peculiar and interesting effect.

ONE of the Paris newspapers published the other day an article on the attractions which have been proposed for the Exposition of next year, but which the Commission has rejected. It may be imagined that among these schemes are some of the most absurd kind. The Eiffel tower, naturally, has been the object of many of them. One man proposed to swing a suspension-bridge from its top to one of the towers of the Trocadéro, which, being on a hill, is not very much lower. If the two towers concerned were adapted to resist the strain caused by a bridge, this might not be a bad plan, as the bridge would give quick and convenient communication between two important sections of the Exposition; but, as they are not so adapted, the project was rejected. Another person thought that it would please the public to be admitted to a tunnel under the Seine, and to take refreshments there in a restaurant provided for the purpose; but this scheme also appeared to the Commission impracticable. The same man proposed to colonize the Seine in the neighborhood of the Exposition buildings with crocodiles. What use he intended to make of his pets does not appear, and his suggestion was rejected. An Englishman, who had, or thought he had, an opportunity to get possession of the bones of Burns, offered to send them to the Exposition for display to the lovers of English literature; but this offer was declined. It seems probable, also, that the mummy of Cleopatra, which, as we were told a year or so ago, had been discovered intact, and accompanied by documents proving its authenticity, and was destined to form one of the attractions of the Exposition, has met with similar treatment at the hands of an unbelieving Commission, for nothing is now said about it, or about that other wonder, the remains of Osiris, which, by singular good fortune, had been discovered in two places, five thousand miles apart, and was to be exhibited at Paris, whether in duplicate or not was left uncertain. If we recollect rightly, there was a prospect of being able to reach some relics of Jupiter in time to get them before the public by next May, but this hope seems to have been abandoned. Meanwhile, if there are not so many impostures there for the crowd to gape at as was once intended, there will be an immense amount of material of interest to sensible persons. Even now, the work on the Metropolitan Railway, the two great Champ de Mars stations, and, of course, the Exposition buildings themselves, is in the stage which appeals, perhaps, most to the curiosity of experts, and the better portion of the people who will visit the great show will hear, with a sigh of relief, of every "barnum," as the French would call it, which the unsympathizing Commission has rejected or suppressed.

A CURIOUS bit of French politics is to be found in the order recently issued by the Government of the Republic for the discontinuance of religious services in the Chapel Royal at Versailles, and the opening of this part of the building to the public as a portion of the museum. It seems to us strange that an administration which has had the courage and firmness to take the management of all the French colonies out of the hands of the military governors, and turn it over to the civil authorities, should reply to the royalist demonstration of a few months ago by secularizing the chapel of a palace; but President Loubet and his associates undoubtedly understand the people with whom they have to deal, and, while it is difficult to conceive how the secularization of a church should act as a moral discipline upon M. de Dion or M. de Castellane, to say nothing of the delectable "Gyp," it is not impossible that the removal of conditions associated in the public mind with royalty may have a real effect on the community in general.

SANTA MARIA DEI MIRACOLI AND THE LOMBARDI.
— VIII.Exterior Pulpit on the Archbishop's Palace, Tours, France. From *L'Architecture*.

A SINGULAR and noteworthy characteristic of the ecclesiastical art of this transition period was its apparently sudden and complete abandonment of the great mass of allegory and religious symbolism which had played so large a part in Gothic ornament. The change will, however, be found actually much less abrupt than it may appear at first glance.

Tendencies toward Classicism are traceable in the work of a period much anterior to the one we are dealing with, this feeling being emphasized rather in the form of members than in their ornamentation, and chiefly in the handling of figure-sculpture. How much of this leaning toward antiquity was survival, and how much of it the first movements of revival, need not be discussed.

The symbolism of the mediæval architect and sculptor had grown into a system practically illimitable. The church, from the evolution of the plan to the carving of capital and crocket, was, in its every element, typical. The mystery of the Cross, the marvel of the Trinity, the infinite ramifications of good and evil, were the themes which determined constructive forms and decorative details. As well as the human kingdom, the animal world, the vegetable and the secrets of the underground were explored with reference to the possible mystic significance of their contributions to religious art.

There was, if we are to believe the archæologists, no stroke of the sculptor's chisel as he cut into the enduring stone the trailing vine, the living leaf, the curling fern, or blocked out the mythic hideousness of gargoyles and grotesques, but was inspired to be an object-lesson to the unlettered faithful, to remind them of the beauty and refreshment of virtue and God's grace, and of the ugliness of sin and the powers of evil.

The very colors preached sermons, and the sanctified odors had their catechismal meaning.

How much of this symbolic lore found utterance in the ornament of Italian churches, how much, indeed, of its ascribed significance had real existence anywhere outside the fancy of monkish writers, who were trying to turn to religious account the heathen and fleshly imaginings which so often became part of the adornment of very sacred places, is a question we may leave to the antiquary. To those readers who may like to rummage in lumber-rooms of the human intellect, I would recommend as guide that remarkable book of Huysmanns', "*La Cathédrale*." Through those pages parades a superb menagerie of mediæval monsters. One will find therein a most exhaustive—and perhaps exhausting—treatise on the mystic botany, the whole amazing pharmacopœia of charm and incantation, so to say, the whole weird mass of legendary religious symbolism.

Born in the mists of the North and growing to its most extraordinary development under the bleaker skies of Normandy, Picardy, and the Isle of France, waxing strong in England and along the Rhine, this curious cult remained an alien under Italian skies. There, the old pagan mythology was at home, and held on to its own with undying tenacity.

The fauns and satyrs, the sphinxes and harpies, the centaurs and sirens, of that half-human bestiary of the Latin pantheism, born of the poet-brains of Greece and Rome, as the Gothic symbolic flora and fauna grew from the sacred soil of the holy books, were never quite driven forth from the haunts which they had long peopled with their imaginary presences, but lurked half-hidden among the sculptured leafage of a Gothicized decoration, the emblems of evil, indeed, but still finding good company among the unclean beasts of the new biblical zoology, and keeping their memories alive, biding their time. And so, when with the revival of Classicism, a breath of Auster blowing over the land, they stepped out from their ambush among the northern plant-forms, now shrivelling in the sirocco of the Renaissance, came forth to the call of Pan, again piping plaintively amidst the sedge, they affrighted none and were but old friends come back to their own after long absence. And, after all, the "Humanist" might argue with, perhaps, no little force that, given the same privilege of assigning arbitrary significations to common things, the right of the mediæval symbolist to say one thing while meaning another—so much granted, then, he might hold that these last are no less worthy to adorn the house of God than are those others of the darker times; that the sphinx, embodying the unguessed riddle of existence, may picture a not-unprayerful attitude of the modern mind; that the eagle of Jove is also the eagle of the Messiah and of John, the eagle of the Resurrection, who stares the Sun of Truth and dips into the solar flames to find rejuvenescence—"your youth will be renewed as that of the eagle;" that the dragon of Perseus was no less the devourer of Innocence than the dragon of mailed Saint George; that the griffin of old Rome was own brother to the mythic mongrel beast of the Gothic builders; that the dolphin of Neptune, sporting in those exquisite perforated panels of Santa Maria dei Miracoli's altar, was also the dolphin of Saint Basil, for example; that the leer of the goat-legged satyr speaks an animalism no coarser than that of the licentious monk of Gothic sculpture whose adventures are carved into cap and choir-stall close to the "Holy of Holies" in many a famous sanctuary; that the vine of Bacchus is as well the vine of the Book; that the flowers, the birds, climbing and pecking among the vines in the sunshine, the whole smiling utterance of the joyousness of life which so strongly marks the Early Renaissance, are but an intensification of that lightness of the Gothic, "babbling in sculptures," as Huysmanns expresses it, throwing off the gloom and fear, the dusk and shadow of that grim "*la Trappe of Architecture*," the Romanesque.

After all, pleads our "Humanist," sunshine and life, and love and flower, and beast and bird are of God, and Pan no less than Beelzebub is his servant.

Such apology as this would Gauricus, say, have framed, to still the uncultured qualms of some devout but unilluminated cleric, troubled among the ghosts of pagan days, who thronged his holy places in those strange new times of the awakening.

But, less concerned with these polemics of priest and critic, and once more summing-up the ornament of Santa Maria as of a paganism very frank indeed, and holding our sculptor quite free of an intention to symbolize or vice or virtue, or do aught, in fact, but beautify his marble with the best skill of his hand and the richest invention of his fertile brain in the fashion of the day, we may go on to other things.

That Pietro Lombardo did not fail to strike the chords of religious feeling in work which called insistently for expression of that sentiment, we have proof in his work at Treviso, which has been held the highest achievement of his art. This work was taken up on his return from Ravenna, where he had finished that monument to Dante, whose excellence, as we have seen, has been debated.

Giovanni Zanetti, Bishop of Treviso, gave funds from his private fortune for the restoration of the cathedral of that place and the building of the Cappella Grande, with Pietro Lombardo, whose fame was now nearing its highest, as architect.

Pietro's success in this task ensured his subsequent commission to create the tomb of the generous donor, Bishop Zanetti dying in 1484 and bequeathing 300 ducats for his resting-place in the duomo. This is a monument of the same order as that to the Doge Jacopo Marcello in the Frari, "in which last," says Dr. Meyer, "the threads of development" (of funerary monuments) "unite in a new combination in which wall-niche tombs and wall-architecture,"—if one may offer so crudely literal a translation,— "involving important technical principles, were brought forward."

The Jacopo Marcello († 1484) tomb and the Zanetti were in hand at about the same time. They are alike in being suspended upon the wall, a reversion to an old form of mediæval sepulchral monument, which, to again quote from Dr. Meyer's monograph, "is here handsomely translated into Renaissance." Whether the type has lost or gained in the change is, perhaps, debatable.

The Marcello Monument will not fail to attract the interest of the visitor to the Frari by the simple elegance of its form and the richness and refinement of its detail. One comes upon it on turning from the nave into the north transept, on whose east wall it hangs. The entire monument is enframed, well up from the floor, against

¹ Continued from No. 1237, page 86.

the rough brick wall (which is unfortunately partly smeared with plaster and whitewashed), in an elongated oval, whose field is encrusted with slabs of marble. On the lower member, flush with the wall, are projected three Corinthian capitals, finishing below as consoles, and joined by a couple of strongly-relieved fruit swags, with flowing ribbons, upon each of which stands one of those finely-sculptured eagles of which the Lombardi were particularly fond. The inscription-tablet below the consoles is dignified with a handsome ornament of wings. It is unfortunately not given in the accompanying illustration.

On low bases set upon the entablature of the consoles are three sturdy men-at-arms in tunics, bending under the weight of the sarcophagus upon their backs, and bracing themselves with hands on knees. The attitudes are well studied and the individual character of each rough retainer well brought out. Shields fill the wall-panels between them.

The sarcophagus is covered with rinceaux sculptured in bold relief, the ornament terminating upon the socle in three lion-feet.

In the centre of these crisp arrangements of leafage is enframed, in a laurel wreath, the winged lion of Saint Mark, the emblem of the state, in allusion to the glory with which the soldier-dead has crowned his country. There are some delicately-cut long-legged birds, clambering with wings out-stretched in readiness for flight, or in the act of alighting among the leafage. They seem to be field-larks, and could one suppose them as intended to carry the meaning given them in the poetic symbolism of Gothic ornament, namely, "Charity, joyous good deeds, praise carolled aloft toward the heavens," they might be of importance as conveying the only hint of Christian sentiment discoverable in the entire monument. It is, however, unlikely that they stand for anything more profound than an intention to enhance the naturalistic freedom and freshness with which this ornament is so superbly sculptured.

In point-of-fact, the Marcello Monument is, like the Mocenigo, frankly an apotheosis of civil and military pomp and power. This is the motive of the principal group, the portrait-statue of the grim captain and the two charmingly stylistic pages who stand, with shields bearing the family arms, upon his right and left. Their hands toward the central figure probably held lances with pennons, which would have added to the balance of the group.

These boys are thoroughly Lombardesque in treatment. Meyer notes their relationship to the Virtues on the Niccolò Marcello tomb, and to the delicious "putti" above the little San Jacopo altar in Saint Mark's to which we have already referred.

The pose of the three figures is of a somewhat theatrical mannerism, but their modelling is excellent, the weights of the bodies are symmetrically disposed over the middle of the supports, which pleases the architectural eye, and the whole effect, if a bit sophisticated, is assuredly most artistic. Time and the incense of a hundred thousand benedictions which has floated from the great altar opposite towards which Marcello looks, the torch-flare of perhaps three times as many funerals which have passed, with their scarlet-robed and capped and leathern-belted mutes, beneath the lofty vaults of this great barn of a church, whence go the Venetian dead to float away to the island of graves across the lagoon, have glorified these marbles with a patina of indescribable richness and soft color.

In Pietro's monument to Bishop Zanetti in the Cathedral of Treviso, we should expect to find, as in the sanctified resting-place of a church dignitary, the expression of more solemnity, of a more nearly Christian reverence, than he has wrought elsewhere. We do find it in the group surmounting the tomb. In the centre is the figure of the Saviour, raised on a low socle, with cherub's head, until the Divine head is above the frame enclosing the monument, and thus dominates the whole work. The figure is seriously and reverently conceived, and is wrought with certain peculiarities of handling which mark it indubitably as Pietro's work. Saint Liberale, the patron of Treviso, and the Bishop, in his robes, kneel, on either hand, at the feet of the Redeemer, the Saint in intercession presenting the crozier of the churchman as a plea of duty well done, while the Christ, bearing in His left hand the cross-crowned globe, turns toward Liberale, as if hearing his prayer, while the right hand is raised as about to bless the humbler suppliant. The action of the group is quiet but forceful, the sentiment of humility, of reverence, simply conveyed. The handling of the draperies is successful.

In the side-figures Meyer discovers the manner of the younger generation. "Tullio," he says, "was, doubtless, working here under the direction of his father."

The glory of the whole monument in the way of sculptured ornament is the splendid eagle below, sculptured with a monumental breadth and boldness of touch which indicate the master's hand. It is invariably accredited to Pietro, and is as noble a bit of sculpture in its kind as even Italy can show. As to the rest, we have in the whole a sufficiently-impressive arrangement, and in the richly-applied ornament an example of the ever-graceful and elegant Lombardi manner, though it is here again, withal, devoid of serious intent and of a character not altogether funerary.

The monument to the Senator Onigo († 1490) is on the choir-wall of the Church of San Nicolò, at Treviso. Here we have the third of the group of wall-tombs and an arrangement very similar to that of the Zanetti, but drier and more contained in handling, and again less rich than the Marcello in the amount of sculptured ornament. It is enframed in an oval, as are the other two.

There is a high base on consoles, sculptured with medallion heads

of Roman emperors and three naked boys in the round, who replace the warrior-caryatides of the Marcello tomb.

The sarcophagus is generously enriched with scrolled leafage of great perfection of workmanship, in the familiar tradition of the Lombardi, and here again we have, doubtless, the same division of labor, the sons, Tullio and Antonio, doing their share of the sculptured ornament, and Tullio collaborating upon the statuary. The inscription and ornament below are richly adequate, and the effect of the whole is stately.

The group above consists of a life-sized portrait-statue of the Senator, in his robes of state, before a throne-like seat, flanked by pages bearing emblazoned shields. The Onigo is executed with much the same quiet dignity which distinguishes the Marcello or the Mocenigo and the Niccolò Tron statues—the latter being also surely assignable to none but Pietro's hand.

A curious feature of the Onigo Monument is the painting in fresco of the wall about it, which revives a much older type of sepulchral monument uniting effects of painting and sculpture.

Meyer thinks that all three of the last-mentioned tombs had originally backgrounds about them, decorated in this manner with mural paintings not strongly conventional but of a subdued coloring in harmony with the whole.

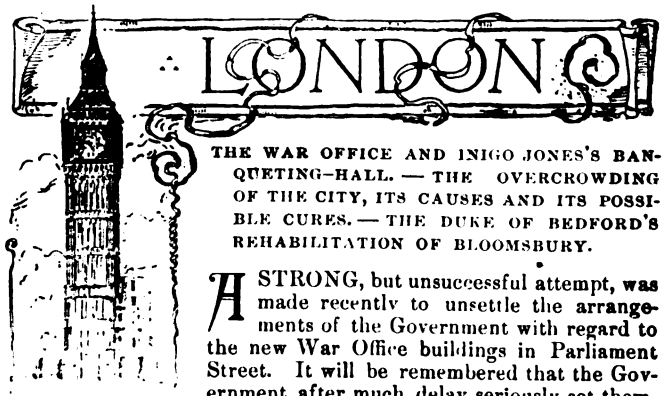
The fresco of the Onigo tomb is said to be by Jacopo de' Barbari, a Venetian painter of about the end of the century. Eugène Müntz, however, ascribes this fresco to Giovanni Bellini.

Meyer calls attention to the two Venetian youths in gala dress painted in perspective projection on the base of the frame, their hands on their swords, in the manner of the esquires on the older monuments. The one on the left is suggestive of Gentile Bellini's treatment of many similar subjects in that famous series of paintings at the Accademia, in Venice. Dr. Meyer was not able to determine if the plastic parts were also originally treated with color. He finds this painted background peculiarly interesting in view of the fact that monuments of the period, while showing a free use of gilding and colored marbles, seem to have avoided polychrome decoration.

The reader will recall those sentences of Eugène Müntz in which, summing-up the achievement of the period in painting and sculpture, he brackets together the art of the Onigo tomb and that of Giovanni Bellini, as each the first in its own field. He sets the Lombardi decoration in the highest place of honor for its grace, spontaneity, freshness, originality: "Poems these, in fact," are the words he uses, "whose authors, the inheritors of Gothic fantasy, evidently believe in the figures they evoke, their sirens and hippocamps recalling in their profusion the sculptures of Rimini, which they surpass in ingenuity and abandon." And again, "where the school of Florence fostered designers, that of Venice made poets." But these were poets "born, not made," and the school of Venice owed more to them than it gave.

A. B. BIBB.

[To be continued.]



THE WAR OFFICE AND INIGO JONES'S BANQUETING-HALL.—THE OVERCROWDING OF THE CITY, ITS CAUSES AND ITS POSSIBLE CURES.—THE DUKE OF BEDFORD'S REHABILITATION OF BLOOMSBURY.

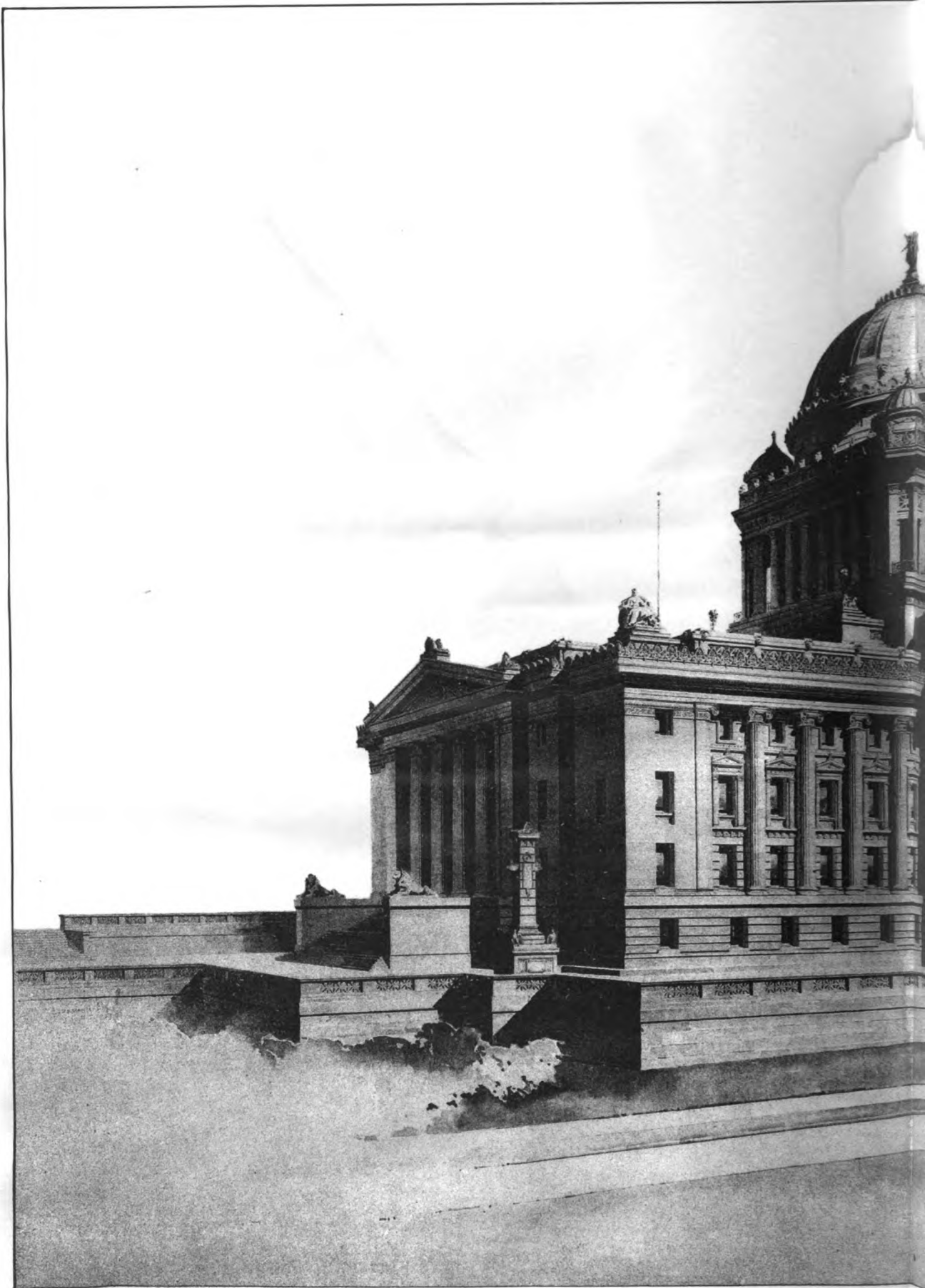
A STRONG, but unsuccessful attempt, was made recently to unsettle the arrangements of the Government with regard to the new War Office buildings in Parliament Street. It will be remembered that the Government after much delay seriously set themselves, two years ago, to carry out the preliminaries necessary to the erection of very extensive public offices in Parliament Street, at the Westminster end of the street, and new War Office buildings on a site called the Carrington-house site, exactly opposite the Horse Guards and adjacent to Inigo Jones's fine work, the Banqueting-hall, sole product of the first James's great building-scheme, the Palace of Whitehall. With regard to designing these new buildings, the War Office was placed in the hands of Mr. William Young, F. R. I. B. A.; Mr. J. M. Brydon, F. R. I. B. A., being retained for the other work. Acting in evident collaboration, as was desirable upon buildings so intimately included in one scheme, these capable architects have produced designs which have been published. While exhibiting no great flights of constructive imagination, nor sharing in the least the new spirit mentioned elsewhere, the new designs have character and strength, and are altogether adapted to their place in a street already lined on one side with Governmental buildings of severity and some dignity. But the scheme is a great one and will involve, at length, a total expense of over two million pounds: it is, therefore, inevitable that a stout opposition should be made to the Government's policy, the system pursued and the individual designs. In this, Lord Wemyss has appeared as champion. Basing his motion on a memorial widely circulated among the members of the House of Lords, he moved in that



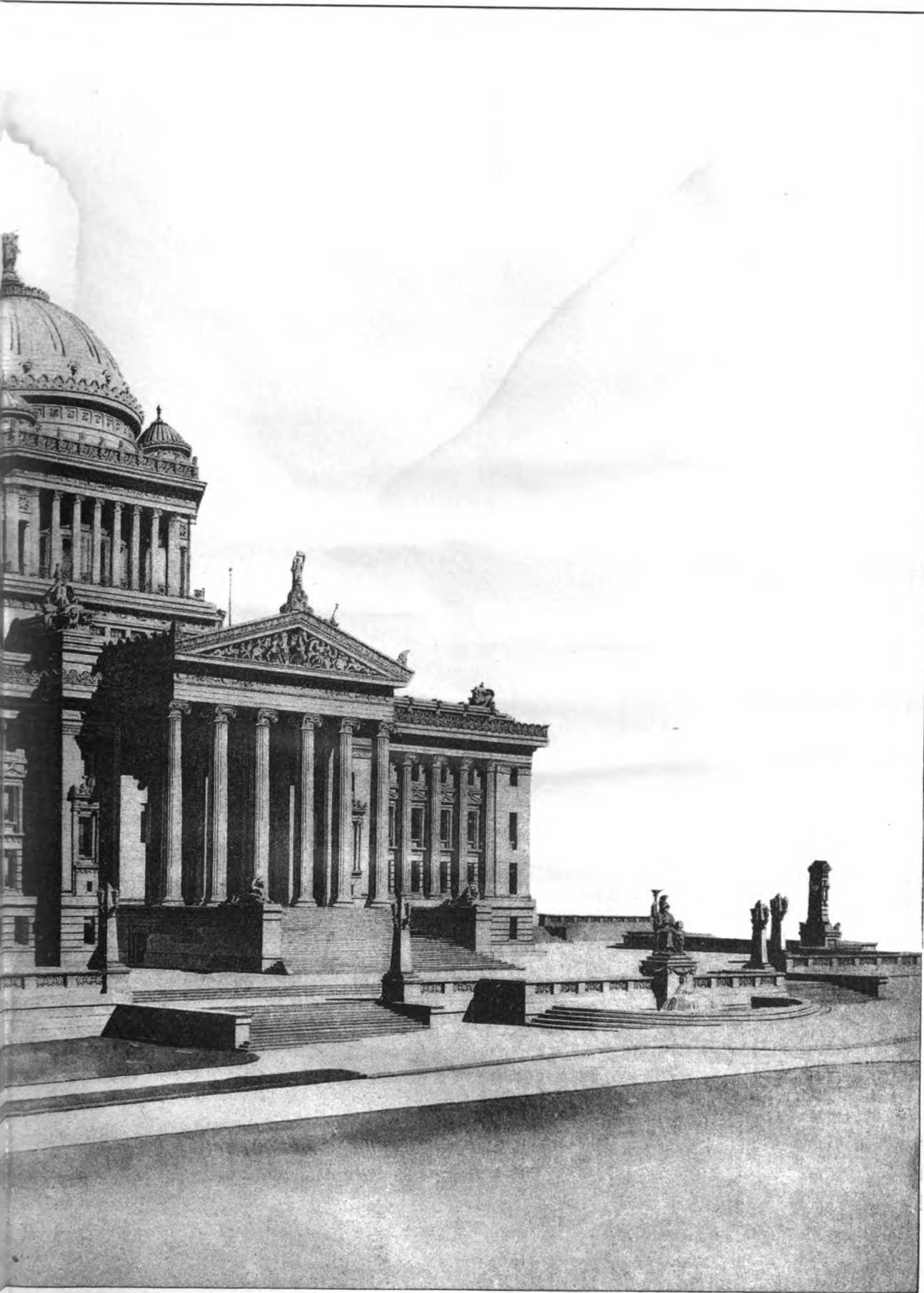
TOMB OF BISHOP ZANETTI IN THE CATHEDRAL, TREVISO, ITALY.
TULLIO LOMBARDO, SCULPTOR.



TOMB OF AGOSTINO ONIGO IN THE CHURCH OF S. NICCOLO, TREVISO, ITALY.



COMPETITIVE DESIGN FOR THE MINNESOTA
BRUCE PRICE, ARCHT.

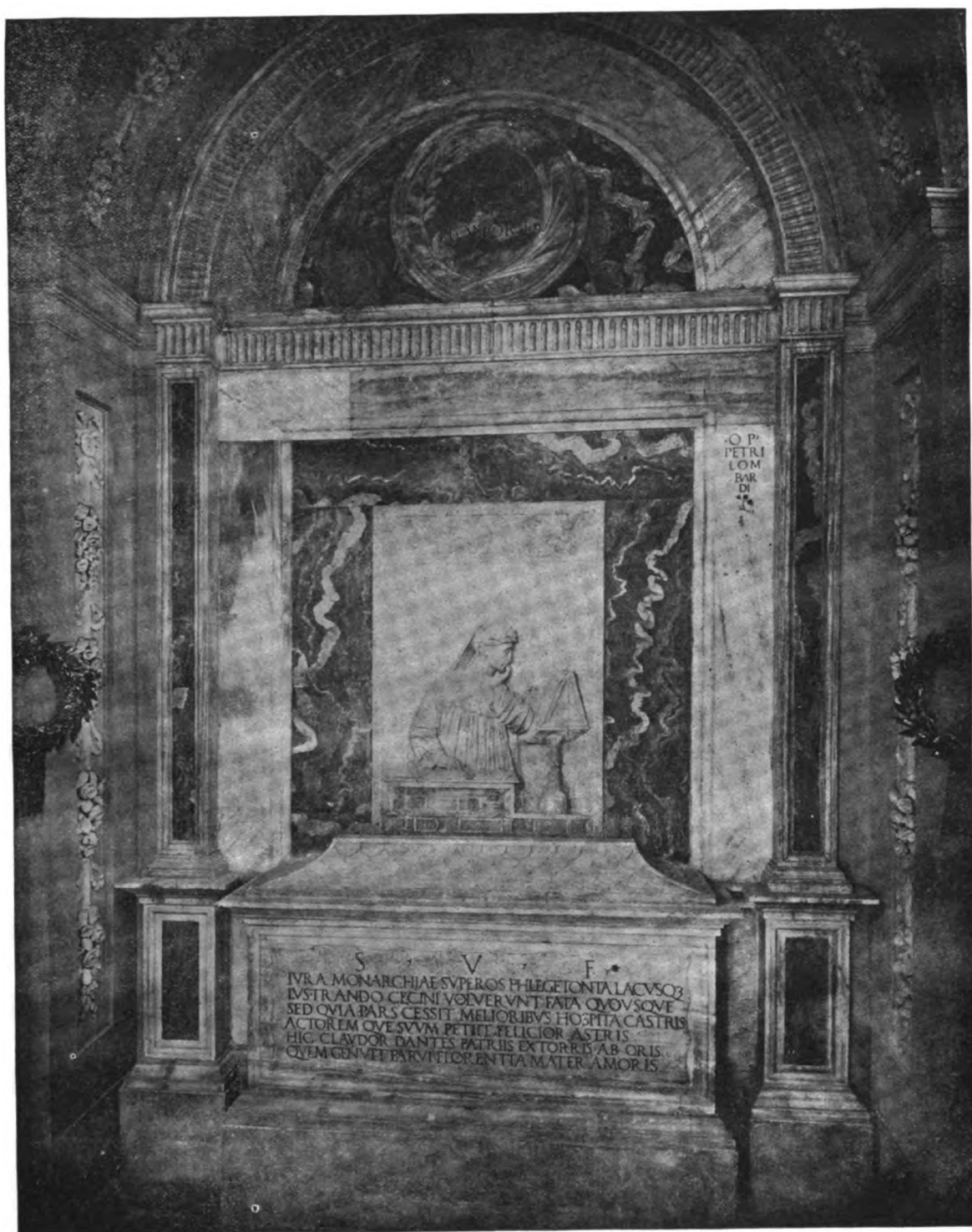


MINNESOTA CAPITOL, ST. PAUL, MINN.
J. H. RAY, ARCHITECT.

MELROVIE PRINTING CO., BOSTON



TOMB OF JACOPO MARCELLO IN STA. MARIA GLORIOSA DEI FRARI, VENICE.



TOMB OF DANTE ALIGHIERI, RAVENNA. ITALY.
PIETRO LOMBARDO, SCULPTOR.

House that models of all public buildings of importance about to be erected at the public cost should be made and publicly exhibited. The defects, he said, of the proposed design for the War Office, in relation to the surrounding buildings (meaning Inigo Jones's Banqueting-hall), would in model have been immediately apparent to all. The design was attacked, the sins of fifty years were visited upon the Office-of-Works, and finally, the main purpose of the motion, the claims of the memorial to consideration were pressed. Certainly, the memorial was weighty, judged by the names attached to it. They included the signatures of one archbishop, seven bishops, six dukes, two field-m Marshals and numerous peers of either political party. In substance, it was a petition requesting that the new design by William Young should be supplanted by an adaptation of Inigo Jones's design for Whitehall Palace, "which it is believed, might, without difficulty, be made to meet all the War Office requirements." Luckily, there is no chance of the Government giving more than an attentive and courteous hearing to the voice of this or any similar memorial, however weighty may be the signatures attached to it. The matter has been slowly and carefully worked out, and the published designs have evoked no hostile comment from the professional papers nor from responsible men known to possess the critical faculty in some degree of development. As to the side issue, of the advisability of exhibiting models of proposed public buildings—this, as a matter of principle, is probably sound and would be welcome generally to all concerned. It is not improbable, however, that the Office-of-Works, leaning towards economy, will tend to discourage the expense, except in extraordinary cases, contenting itself in a general way with the perspective, which, if it may combine cheapness with truth, is at the same time capable of so much delightful elasticity and artistic by-play in the hands of a clever man.

London is overcrowded and is beginning to know it; and to recognize, too, the manifold economic drawbacks which such a condition entails. When a movement has its origin in an undeniable grievance, for which a continually increasing portion of the community is desirous to find an adequate remedy, the progress of such movement is detained only by organized opposition or natural difficulties. Open opposition to the relief of the overcrowding of London is a policy so retrograde as not to be includable in the programme of a party. The natural difficulties are more formidable, sufficiently so to render the solution of the problem a slow and troublesome matter.

Doubtless, London has been overcrowded through all its history; doubtless, so long as it retains its full vigorous state in the world's economy, it will remain overcrowded—to some extent. The importance, therefore, of the question in any age, and very principally in the present, depends mainly, I think, upon degree. Judged on this basis of mere degree, the London overcrowding question at once assumes interesting proportions. The most reliable statistics to hand show that one-fifth of the total population of London is overcrowded—that, spite of the law, 900,000 people are living in serious contravention of recent legislation, notably of the Public Health Act, 1891. To explain the significance of these figures, it is necessary to state that "overcrowding" here means the appropriation of less than four hundred cubic feet of air-space to each person, and, in general (assuming to tenements and lodgings an average of 1,000 cubic feet available air-space, less furniture, say 800 cubic feet net), an occupancy per room by more than two adults, or one adult and two children. This minimum of 400 cubic feet per head is in excess of the total living and sleeping space available to 900,000 inhabitants to-day.

Thus much for single-room dwellers: of London as a whole a competent authority estimates that 35 per cent, or over a million and a half, are overcrowded and that not more than two million in five live in more than the minimum amount of space. Of single-room dwellers, not less than 26,000 are living six and more in a room. There is no doubt about it; statistics have been produced without end, all conveying the same final conviction, that thousands of families are living in London so congestedly as to preclude all the possibilities of benefit from air and sunlight, careless alike of health and decency, irresponsible in mental, moral and physical development. What are the causes for this condition of things in the centre of the British Empire, in its most prosperous and wealthiest day, when the unemployed is practically non-existent, and the social condition of the people is brought with steady persistency towards a single plane? In the London of to-day there are building regulations and sanitary laws which prohibit the possibility of further overcrowding of the land: in days gone by, no such restrictions existed; the demand for house-building land was met without difficulty; land was cheap and plentiful, yet in cases where buildings already adequately covered the ground there was nothing to prevent the utilization of garden-plot areas between the backs of two rows of houses for the erection of a third row; so every opportunity was taken in site-making, and wherever a house could stand, there it was built, without regard for light or air. This came to an end with the enactment of building-laws which rendered the undue crowding of buildings illegal. But these enactments and, most particularly, the Building Act of 1894, did more than merely limit the capacity of building-sites: by rigid requirements in construction and material, the old type of shoddy-built small house became impossible. These disabilities imposed such a check on the production of buildings that the overcrowding question in London, in spite of enormous develop-

ment of small properties in adjacent neighborhoods, external to London, at once became marked and striking.

There is probably no need to speak of the ills of overcrowding or the far-reaching nature of the evils that directly and indirectly spring from it. If there were doubt in the matter, statistics are at hand to prove. Mr. George Haw, in his striking series of letters communicated to the *Daily News*, and reprinted recently in book form under the title "*No Room to Live*," goes into the more direct products of overcrowding. They include insanitation, immorality, crime, drink, madness, disease, debility, consumption, death. The menace perpetually held out to the neighboring districts by the overcrowded is too obvious to be dwelt upon. The action and reaction is unending, and the annual cost and loss incalculable. The inexpediency of these ill conditions in the State, it will be thought, must long ago have been self-evident to the careful. Remedies, it is true, have been framed, but evasion, doubtful tactics, apathy and selfishness have combined to make the remedies in part a dead letter. The Building Act of 1894 is, and has been, an unquestioned success, the Public Health of 1891, and the Houses of the Working Classes Act, 1890, only partly so; while sundry standing orders and by-laws have come to be totally disregarded.

The Public Health Act of 1891 gives powers to a Vestry to register and inspect all houses let in lodgings or tenements. I described in a recent letter how this opportunity had been entirely neglected. Had the Vestries rigorously followed their duty on the passing of the Act eight years ago, by this time the overcrowding problem would doubtless have been under some sort of control. Instead, some Vestries have registered and neglected to inspect and act, others have done nothing at all, and none have worked in the true spirit of the Act. So that to-day the problem is swollen to such proportion that it must be years, even with the most vigorous action, before the evil can be blotted out. No drastic and revolutionary measures are easily and with haste carried out upon 900,000 people. The most that can be done at present, apart from hunting down and checking the grossest cases of overcrowding, is to utilize to the full the powers which the Public Health Act gives to insist upon a sound condition of sanitation and healthy cleanliness. If all our overcrowded tenements were weather-tight, sanitary and clean the evil would be reduced 50 per cent. But not the Vestries alone neglect their powers. Public bodies who may obtain powers of compulsory purchase of property for any purpose are compelled by law to make provision elsewhere for the number of people dishoused, when more than twenty houses are destroyed. The companies have evaded the provisions easily enough in time past, and seem to have no difficulty in discovering fresh methods of shuffling. They will arrange that all the coveted houses shall be closed and tenantless before applying to Parliament for powers of purchase. It can then be stated that no rehousing is required, as all the houses are empty! Again, the Midland & Southeastern Railway Companies, seeking Parliamentary powers, when compelled to undertake the rehousing of such people as their operations should displace, saved themselves trouble and expense by buying up building-schemes of block-dwellings already started. In this way the single site is called upon to accommodate both those people displaced by the clearance of the site itself, and also those disturbed by the railway company's movements. As block-dwellings seldom accommodate more than a moderate proportion of the people displaced from old crowded houses, it follows that the net result of these proceedings is the dishousing of the greater proportion of those disturbed. The School Board, too, of all bodies, has recently had the mortification of seeing its own particular shift exposed and most radically crushed once and for all. Their trick was to acquire something less than the statutory twenty houses which, taken together, involve compulsory rehousing; nineteen would be taken in one year, and the balance included in an independent application to Parliament the year after. A recent case of this sort in the East End did not escape the vigilant notice of certain gentlemen who interest themselves in social matters, and by a short and vigorous campaign in the columns of the *Times* a higher authority than the School Board was set in motion. Just before Parliament rose, the standing orders were amended to the effect that in the future the Board would be obliged to find proper accommodation for tenants of houses "liable to be taken" for the erection of schools, as well as of houses actually demolished; furthermore, the Board is called upon to make good its delinquencies by building to accommodate a population equal to that displaced during the last five years—about three thousand persons! Thus mercilessly have the evils that have arisen around us one by one to be rooted out. The present consummation of overcrowding is the product of years of neglect and centuries of ignorance and darkness; no sovereign remedy exists, but the product of years must in years also await its revolution.

The manner in which the present untoward conditions are to be ameliorated is manifold. To touch on but a few of the agents that will be most active, we have: (1) Renewed activity of London local bodies under the influence of the New Municipalities Act; (2) Increased supervision over the Municipalities by the London County Council; (3) An extended use of the building powers possessed by the Municipalities and County Council under the Housing of the Working Classes Act; (4) Increased and cheaper communication with outlying districts; (5) Removal of some trades and manufactures which are not necessarily bound up with London and centrality; and (6) New powers of compulsory purchase of unsound

properties, other than the system now in use. At present it pays well to systematically purchase inferior properties, inflate the rents to an abnormal degree, and allow the houses to fall into a filthy and dangerous condition of disrepair; always holding in deliberate view their probable inclusion in some scheme of clearance and reconstruction by Vestry or County Council. It has been done constantly, and will continue so long as an artificial value, plus 10 per cent for disturbance, is obtainable as compensation for compulsory purchase. But the appreciation of this iniquity grows, and the time is awaited when the possession of unsound properties shall qualify for confiscation, somewhat on the thorough-going lines adopted in Berlin.

The movement, which springs from a desire to remove anomalies and dangers, injustice and disabilities, is deep down and too well based to be temporary; it is one which each succeeding year, pouring in its annual increase of 60,000 persons will render more and more notable, less notable only than that consummation which is, perhaps, reserved for another day, not ours, when the slum, slum life and slum character shall disappear, and patriotism and social tolerance be the wider spread, and more robust for it.

The prosperity of the building-trades, judged by mere business, continues to increase, so far as London is concerned, "by leaps and bounds." Whole districts are now conveying an impression of newness; miles of streets ten years ago showed nothing but the small rectangular shop-front, with dull-painted fascia and cornice over of wood, and above all the uncompromising surface of London stockbrick, square and broken only by rows of windows, themselves rectangular, centred one above another, all with cemented, white-painted 4½-inch reveals; miles of street-front show the same thing to-day, and there are yet more miles that only substitute for the shop-front, two windows, all, as before, gazing blandly across a fathom of area, and at one side a door of generous proportions. Sometimes these are gifted with a hood of greater or less elegance; sometimes the window-frames are placed flush with the wall-face, and there is a stout and crafty character in the area-railings. The whole, with these redemptions, is acceptable enough, but sadly lacks form in skyline. On the whole then, the metamorphosis which is slowly wiping away this solemn urbanity, and substituting buildings overflowing with the new spirit, is in process of making London an intensely interesting study. Red-brick is the rule, with Portland, Ancaster or other freestone dressings. Terra-cotta, with its lavish plastic moulded ornament, is common too; but whatever the medium, surfaces everywhere break out into bays and oriels, angles run up to finish in copper domes or dwarf-columned turrets; roofs pitch high and are spotted with gabled or corniced dormers; yet within, in the best examples of modern work at least, as that of Allen Wigors, Beresford Pite, Banister F. Fletcher, Harold Cooper, Ernest George, Leonard Stokes and Philip Webb, from capping cornice of chimney-stacks to the copper knocker on entrance-door there is predominant a note of restraint, with purpose, with care and knowledge of form, with clean finish and balanced proportion.

No district is changing more rapidly and systematically than Bloomsbury. From its centrality the resting-place of a large proportion of the foreigners and provincials visiting London, it is widely devoted to *pensions*, boarding establishments, hotels and the humbler apartments. Cosmopolitan, it is therefore none the less well-nurtured; indeed, now that the leases of the greater part of the district are reverting to the freeholder, the Duke of Bedford, with leases renewed, whole streets are putting on a new appearance: Southampton Row, for example, feels in advance the increased measure of importance it will possess when it forms the approach-road from the north to the great new thoroughfare to be constructed from Holborn to the Strand. It is the high-road from all the termini of the great railway-lines from the north, and is consequently being largely given up to hotels, from the unassuming temperance establishment, with fifty beds, to the new colossal building which stands at the north end, facing Russell Square, with nearly eight hundred rooms; this, the Hotel Russell, will have cost on completion something over a quarter of a million, and is to be opened, it is hoped, early next year. So, in the very nature of things, must this reconstruction continue until all the Bloomsbury known to the Newcomes, to Pendennis and to Becky Sharpe be altogether passed out of knowledge. One feature in the Duke of Bedford's policy is especially improving to the district. In Thackeray's day, when it was not necessary to look farther than Bloomsbury for persons of quality and leaders of fashion, when almost every house kept up coach and horses, it was deemed necessary or desirable to pack with mews the inside of every rectangle of houses abutting on four streets. The advance westward of the centre of society's orbit, as well as the modern facilities of communication, put out the greatest need for stabling in these districts. Crowded, stuffy, unhealthy, as the arrangement always was, it yet doubtless required some soundness of principle to recognize the inadvisability of cumbering the ground with other building-schemes. A general clearance of the rectangle of mews, *cul-de-sac* alleys, and ill-drained stable-yards, has therefore been made in many instances, and has proved so successful and improving to neighboring properties that the system is likely to be extended. When cleared, the land is laid out in gardens, kept up by the Duke's own gardeners; the dismal outlook upon squalid roofs and walls is exchanged for the greenness of foliage and coloring of flower-beds; in flats, hotels and dwelling-houses the back portion of premises has come to possess a higher intrinsic value than even the street-front.

DEMOLITION OF CHIMNEYS.



IN these progressive times of setting back ancient building-lines, widening the roads and streets, and generally improving the thoroughfares of nearly all our important cities and towns and local centres of trades and industries, the operations of destruction and demolition must inevitably precede those of reconstruction and rehabilitation. A very recent and excellent example of the first part of our statement, now rapidly approaching completion for the present, was afforded by the clearance upon a large scale of the west side of Parliament Street, King's Street, and a part of the north side of Great George Street, extending as far as the new building of the Institution of Civil Engineers. In effecting the removal of structures of all descriptions, there are three points of primary consideration which must be carefully attended to. The first is to accomplish the work without causing any injury to the safety of the public and the workmen employed; the second is to conduct the taking down of the buildings in such a manner as will do no damage to adjoining property situated beyond the limits of the area of demolition. Again, attention must be given to the cost of the operation, which will mainly depend upon the fact whether the old materials are worth anything or only fit for breaking up and carting away at the minimum of expense. It is but fair to state that more care is bestowed upon the taking down of old structures than formerly, which is possibly partly due to the circumstance that the value of the old materials has increased, and also that the safety of the public demands it. Even under the most favorable conditions, a deal of damage is done, some of which is unavoidable, in the removal of houses and buildings, especially to the glass, tiles, slates, or whatever materials the roof may be covered with, which suffer considerably.

It is evident that the cost of the temporary or false work, as the Americans term the scaffolding, ladders and appliances for hoisting, lowering and shifting the material, must, other things being equal, be proportional to the height of the structure. It is, therefore, a much simpler and less costly operation to take down a building some 60 feet or 70 feet in height than to apply the same process to one measuring between 200 feet and 300 feet in altitude, as in the case of a tall chimney. It is true that the demolition of a chimney is not an every-day occurrence, but, nevertheless, it has to be occasionally undertaken. An instance took place a very short time ago which presents some practical information and details which are deserving of notice. The case in point was the removal of a chimney in the North of England, which had been built just twenty years before. There was no defect or weakness in the chimney which necessitated its demolition; but it no longer served its purpose, and so it had to come down. Its principal dimensions were — height 270 feet, external diameter at base 21 feet, and at top 14 feet. It was built of brick, with a thickness of 3 feet 6 inches at the ground-level, and of 9 inches at the summit. The *modus operandi* was conducted as follows: at a height of 3 feet from the ground-line portions of the wall were cut out on opposite sides of the chimney, and the brickwork replaced by wooden blocks 18 inches in height, 14 inches in breadth, and 12 inches in length, wedged up at the corners by small thin pieces of hard timber. Each of these blocks was composed of several series of planks superimposed upon one another in tiers, and separated by small wooden blocks 3 inches in thickness. The hollow spaces in each tier were filled up with sawdust, and the whole of the timber-framing well saturated with tar. About 40 feet of the circumference was treated in this manner, which left, as the perimeter of the chimney was 64 feet, 24 linear feet of solid walling to support the structure previously to the second phase of the demolition. This comprised the piling up of an inflammable palisade of woodwork around the spaces filled as already described, and setting the whole on fire. In order to permit of the combustion of the timber proceeding as uniformly as possible, which was essential to the success of the method adopted, jets of paraffin were thrown upon any part where the flame showed signs of slackening. In less than ten minutes after firing this destructive *auto-da-fé*, the chimney quietly collapsed along the lines laid out for it. The cost of the whole operation was less than half of what would have been incurred if the old method of employing scaffolding and its accompanying accessories had been adopted, without taking into account the many thousands of bricks which reached the ground in fairly good condition. These, when scraped and cleaned, could be used in the "backing" of any description of brickwork, and could be readily sold for whatever price they would fetch. — *T. C., in the Building News.*



WE have heard much of late touching the failure of South Kensington. The institution, which was founded nearly fifty years ago to correct the hideousnesses produced by the decorative artists of that period, has been criticised and found wanting; and yet the fact that the most artistic nation in Europe is always sending up plaintive laments over its inferiority in art manufactures, by reason of the superiority of the British training-schools, seems to prove that some advance has been made, even though accompanied

by much dry-as-dust theoretical teaching. The fallacy of freehand drawing, which is anything but free, being a pure convention (for hard outlines are non-existent in Nature), has much to answer for; but the last new craze of teaching children at primary schools to paint leaves and plants with a brush full of liquid color and much water, without previously drawing the form, will no more aid us in producing beautiful manufactures than the stilted, hard, uninteresting outlines. The British have been clattering about art for half a century, but they are not an artistic nation even now; as William Morris said: "By far the larger part of civilized mankind does not feel that lack in the least, so that no general sense of beauty is extant which would force us into the creation of a feeling for art which in its turn would force us into taking up the dropped links of tradition, and once more producing genuine organic art." And yet when we remember bead-trimming to table-cloths, designs for carpets consisting of large bunches or baskets of flowers, shaded to give the impression of their being in the round, and wall-papers of trellis with creepers or grapes hanging therefrom, we may find much to be thankful for, although we are still given much cause for shuddering at the proximity of vases of flowers to our fireplaces, and other designs equally ridiculous and unsuitable for the decoration of encaustic tiles.

The authors of this collection of essays¹ upon the decorative arts may be congratulated for giving the public excellent information in a concise form, and at a popular price; but it is curious, after cutting the leaves of the book, and turning them over in the uncomfortable and irritating manner which was inevitable before cutting-machines were invented, to read the following: "The boards having been attached, the edges of the book are now cut smooth and even at the top, bottom and fore-edge." (Book-binding, p. 139.)

That all branches of decorative art are discussed with more or less detail, the list of contents shows most undoubtedly: textiles, decorative painting, design, wall-papers, fictiles, metal-work, stone and wood carving, furniture, stained-glass, table-glass, printing, book-binding, sgraffito, stucco and gesso work, cast-iron, dyeing, embroidery, lace, book-illustration, carving, intarsia; and the names of William Morris, Walter Crane, G. T. Robinson, Somers Clarke, Stephen Webb, F. Madox Brown, J. H. Pollen, and other promoters of the Arts and Crafts Exhibitions, are sufficient guaranty of the efficient manner in which each subject is treated.

Mr. Somers Clarke draws attention to the fact that "a sculptor would think it a condescension to execute what, for want of a better name, we must call decorative art"; and very possibly he is right as regards some Europeans, but in France this is not so. A French sculptor will certainly spend "equal zeal on a door, a pulpit, or a tomb," and in this narrowly follows in the steps of the great Florentines. But these Arts and Crafts essayists have few good words for French art or artists, even French furniture finding but scant praise from them. And yet, surely, there are other cabinet-makers of French nationality besides Boule who are worthy of mention for their perfect craftsmanship. Another curious omission is wrought-iron work, which surely deserved an essay as much as cast-iron.

One thing insisted upon by several of the writers is the superiority of bright colors to faded ones, a dogma which will surprise many persons, and which ought to bring dismay into the camp of the worshippers of our "artistic material" providers. Rightly or wrongly (the latter seems to be the fact), all the terrible dark sage-green papers and carpets were looked upon, a few years ago, as the perfect embodiment of correct taste as taught by William Morris; and we who admired the beautiful gray-panelled walls of Mme. de Sevigné's rooms in the Hotel Carnavalet were consigned to the limbo of bad taste. Well, times have changed, and sage-green and dimly dark rooms, with innumerable death-traps in the shape of tiny tables scattered about, are now taking our places in the aforesaid limbo. So much the better. Perhaps in another decade or two, our books may have their pages cleanly and evenly cut again, and so defeat the ravages of smoke and dirt, besides enabling us to turn their leaves hurriedly, as is needful in these breathless times.

In the meantime, every cultured amateur, and the uncultured also, should possess himself of this little volume, for it is an "enquire within," with satisfactory information upon most branches of decorative art.



BALTIMORE MUNICIPAL ART SOCIETY.

THE Baltimore Municipal Art Society, which was organized under favorable auspices during the early part of the present year, has now a large membership, and a limited amount of funds at its disposal for the various objects named in its Constitution and By-laws.

For the purpose of increasing general interest in its work, and of enlisting further active coöperation from both individuals and the various art and literary organizations already existing in the city, it is proposed to hold a special annual conference of the Society in the

¹"Arts and Crafts Essays": Longmans, Green & Co., London and Bombay. 2s. 6d. net.

coming autumn, open to the public, for which purpose McCoy Hall has been kindly offered. It is hoped that the proceedings of this conference, which will extend over two days and will consist of several meetings of informal character, may be made thoroughly attractive to all persons in any way interested in art matters, and more particularly in the efforts to give to Baltimore, both in its parks and squares, as well as on the interior of its public buildings, additional objects of distinctly artistic merit, for which there appears to be not only large opportunity, but in many instances urgent need.

Three special topics, among others, will probably be considered during the conference, namely:—

1. Open spaces and minor parks.
2. Mural decoration of public buildings.
3. Occasional exhibitions and proper rooms for them.

It is expected that several distinguished representatives from other cities, men of recognized authority and able exponents of their special topics, will be present with prepared papers or addresses, the subjects of which may be interestingly illustrated, and direct reference and application made to Baltimore's possibilities and needs for more artistic development and improvement in its public places.

THE SKETCH-CLUB OF NEW YORK.

THE first regular monthly meeting and dinner of the Sketch Club of New York was held Saturday, October 21, at the "Du Doré" where the formation of classes and the coming year's work were discussed.

ADOLPH MERTIN, *Recording Secretary.*



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

ACCEPTED MODEL AND ORIGINAL SKETCH FOR PEDIMENTAL GROUP: APPELLATE COURT-HOUSE, NEW YORK, N. Y. MR. C. H. NIEHAUS, SCULPTOR, NEW YORK, N. Y.

[Gelatine Print issued with the International and Imperial Editions only.]

A COMPETITIVE DESIGN FOR THE MINN-SOTA STATE-HOUSE, ST. PAUL, MINN. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

TOMB OF DANTE ALIGHIERI, RAVENNA, ITALY. PIETRO LOMBARDO, SCULPTOR.

For descriptions of this and the following named tombs, see article elsewhere in this issue on "Santa Maria dei Miracoli."

TOMB OF BISHOP ZANETTI IN THE CATHEDRAL, TREVISO, ITALY. TULLIO LOMBARDO, SCULPTOR.

TOMB OF JACOPO MARCELLO IN THE STA. MARIA GLORIOSA DEI FRARI, VENICE, ITALY. PIETRO LOMBARDO, SCULPTOR.

TOMB OF THE SENATOR AGOSTINO ONIGO IN THE CHURCH OF S. NICCOLO, TREVISO, ITALY. PIETRO AND TULLIO LOMBARDO, SCULPTORS.

[The following named illustration may be found by reference to our advertising pages.]

MAIN STAIRCASE-HALL: THE GUILDHALL, CAMBRIDGE, ENG. MR. JOHN BELCHER, ARCHITECT.

This plate is copied from *The Builder*.

[Additional Illustrations in the International Edition.]

THE TOWN-HALL, TANGERMÜNDE, PRUSSIAN SAXONY.

[Gelatine Print.]

THE town of Tangermünde, on the River Elbe, in Prussian Saxony, occupies a prominent place among the towns of the "Altmark," distinguished for the numerous examples of mediæval brick-architecture they contain. As early as the twelfth century, the Ascanian Margraves erected a castle here, which, in their feuds with the Wendish frontier-tribes, served them as a point of vantage. Later on, Emperor Charles IV, of the house of Luxembourg, chose Tangermünde for his favorite seat, and had the old

castle repaired and put in splendid condition. Still later, the Margraves of the Hohenzollern dynasty frequently held court here, until Berlin became the capital of their dominions. This proved a severe blow to the thriving town, from which it never afterwards recovered. Among the buildings dating from the fourteenth and fifteenth centuries that survived the havoc wrought in Tangermünde by the terrible Thirty Years' War, which destroyed many of the most interesting old structures, perhaps the most attractive is the Town-hall (of which our plates show two outside views), composed of two wings meeting at right angles, the larger one dating from the beginning, the smaller one from the end, of the fifteenth century. On the former, fronting upon the market-place, glazed brick of a dark-green color is largely used for decorative purposes, while the latter wing was erected at a time when glazed brick had gone out of fashion. In 1617, when a general conflagration laid waste a considerable portion of the town, the Town-hall suffered severely, the flames consuming not only parts of the building, but also all of the valuable archives contained therein. Not until after 1840 were the destroyed portions rebuilt, under the capable direction of Herr Stüler, Conservator of the State Monuments of the Prussian Monarchy. The entire north side of the building, with the arcaded loggia and stair-tower, was then erected, forming an organic addition in well-studied harmony with the older portions.

SIDE AND REAR VIEW OF THE SAME.

[Gelatine Print.]

OFFICE FIREPLACE: HOTEL MANHATTAN, NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

"GLENCOT" WELLS, SOMERSET, ENG. MESSRS. ERNEST GEORGE & Peto, ARCHITECTS.

THE QUEEN'S TEA-ROOM: THE HAGUE, HOLLAND.



EXCESSIVE VIBRATIONS FROM ELECTRICAL POWER-HOUSE RESTRAINED. — Samuel C. Bowden, who has been a yearly tenant since 1895 of the building, 121 East Twelfth Street, adjoining the power-house of the Edison Electrical Illuminating Company, and has rented rooms to transient and permanent lodgers, brought an action to restrain the company from such use of its machinery as to interfere with his tenancy. On the trial, before Justice Russell in Supreme Court, Special Term, Mr. Bowden averred that the use of the company's machinery and appliances had greatly depreciated the value of his tenancy by the vibrations in his building, the noise, falling soot, cinders, and water from condensed steam. Justice Russell recently rendered judgment for the plaintiff, enjoining the overloading of the company's machinery so as to produce unusual vibration or noise, and the perceptible deposit of water on Bowden's premises, whether from condensed steam or tank overflow. The Court also awards \$250 damages. Justice Russell said he was satisfied from the evidence that the customary use by defendant of its generating power has been reasonable, and departure therefrom only occasional, caused by overloading or carelessness. Mr. Bowden's building was old and out of repair, and its depreciation of rental value was merely caused by its undesirability for living purposes on that account, and the lessening availability of residence in that locality. "It will not answer," the Court said, "to use the discretionary power of injunction to stop a large industry of public utility, unless the occasion requires such extreme relief. It has a right to use its plant for effective generation of electricity, with the reliance that adjacent buildings are fairly protected in construction and stability from harm on account of reasonable use, and are tenanted by individuals of ordinary nerve hardihood. It may, within the lines of such reasonable use, advance its enterprise according to increase of opportunity and invention, and is not compelled to remain stationary solely on account of adjoining buildings, provided the boundary of reasonable use is not overstepped. A tenant has the reasonable right to be satisfied with his location, and renew his lease from year to year. But he must have in view the burdens which contiguity to machinery must bear to the tenancy, present and prospective, of business enterprises in that locality. Deliberate choice to stay bears strongly on his perception of the reality and magnitude of the evils of his environment. Adjusting the rights of the parties, any restraint upon the defendant must be against excessive exercise of its right to generate electrical light and power, and not against its customary use. Though an excess in the past has been merely occasional, it may require restraint, if the course of the past is followed, and of that alone we have knowledge. Such possibility or probability may wisely call for a restraint which will tend to insure continual watchfulness and prevention of injury. The humblest home or business is entitled to the protection of the law." — *N. Y. Times*.

CHIMNEY FIRES. — Defective flues are responsible for a far greater number of fires and consequent loss to owners or to insurance companies than is generally understood, and at this time of the year a warning is timely. According to the carefully-kept *Chronicle* fire-tables, there have been 260,384 fires in this country in the fifteen years

ending with 1898, of which 36,576, or a little over fourteen per cent, were credited to defective flues. The *Insurance Press* expresses the opinion that 20 per cent of the insurance losses are due to this cause, and says if one-half the amount were saved it would allow a 5-per-cent reduction in premiums on the class of property exposed and properly protected.

LUMBER IN THE DEWEY STANDS. — The *New York Lumber Trade Journal*, in one of its recent issues, gives an estimate of how much lumber was used in the stands for the Dewey parades, and places the amount at 7,758,904 feet. The *Lumber Trade Journal* has, it says, made a fairly complete canvass and adds that the stock was furnished by thirty-five concerns. With an average value of \$22.50 per 1,000, which it says is a very conservative estimate, the total cost of the lumber was \$174,576.32.

PEPPERMINT FROM SEWAGE-FARMS. — Considering the part that peppermint has played already, in securing the detection of defective plumbing, it is interesting to learn that the usefulness of this humble herb is to be of benefit to sanitary well-being in quite another field, for, as the *London Telegraph* says, "Peppermint is reviving the drooping spirits of the depressed agriculturist. So profitable has the Sutton Urban District Council found its cultivation that it has determined to add two more acres to the area at present devoted to that fragrant plant. The body mentioned has paid great attention — more than most local authorities — to the utilization of sewage, and peppermint is one of the products of the land where this is turned to profitable account. Last year there were four acres under cultivation. When the plant is cut and dried, the leaves are distilled, and the oil thus obtained finds a ready market. The yield of this odorous liquid was 119 pounds."

LUMBERMEN SECURING UNSURVEYED LAND. — It has just been discovered in Minnesota that lumbermen are securing some of the most valuable timber-lands in the northern part of that State for almost nothing, and are doing it legitimately, too. During President Cleveland's administration he was much interested in the matter of preserving the forests, and a number of large forest-reservations were made by him, mostly in the West. On the lands thus reserved there were a good many settlers, and to compensate them for the loss of their lands they were given forestry scrip. Owners of this scrip could locate on land anywhere in the United States, whether surveyed or not, and it was the first scrip ever issued entitling its holder to locate on unsurveyed lands. By the purchase of this scrip, the lumbermen have entered upon the choicest of the pine-lands in the unsurveyed portions of the State, paying \$2 to \$4 per acre for land that is worth many times the larger sum. There is no way to prevent this, as the holders of the scrip are allowed to sell it, and the purchasers acquire the rights of those to whom it was issued. It is suggested that an appeal be made to Congress, but before that body can act the best part of the unsurveyed pine-lands will have been acquired by the timber-men. — *N. Y. Evening Post*.

RECENT DISCOVERIES AT CARTHAGE. — M. Gauckler, an eminent archaeologist, under the auspices of the French Government, has recently been conducting some excavations on the site of ancient Carthage. His efforts for some time have been confined to the Temple of Jupiter Ammon, where, in the farthest corner and in the lowest stratum, he found three marble statues in almost perfect condition. One of the statues, which represents the goddess Ceres, it is claimed, worthily rivals the Melos Venus. Time alone can justify that claim. A second statue is also a Ceres, but of inferior beauty; the third is a veiled priestess. The statues were found in a vault, the entrance of which was closed and entirely concealed by a mosaic. These statues are but a few of the many relics recently excavated. Tiles, coins, lamps, etc., were found near the surface while the ground was being plowed preparatory to excavating. Five feet down were found Byzantine tombs, and in a lower stratum a Roman house, presumably of the Constantine period. The mosaics in this house were of great interest; two of them were removed to the Museum of Bardo. It was then discovered that they concealed chambers still more ancient, and in one of these were found the three statues, which are considered the finest examples of classical art discovered within this generation. — *The Art Collector*.

THE ORIGIN OF PEW-RENTS. — When did the practice of charging pew-rents begin? The question cannot be precisely answered, but some accounts which date back to 1533 show that the principle of allotting sittings to particular people and charging for the same was then in force. "In ye church at Whalley" there was a dispute regarding a very large square pew known as St. Antony's cage, which belonged to the Towneley family, lords of the manor, and other pews near to it. The dispute was referred to the arbitration of Sir John Towneley, the lord then living, and his award was as follows: "My man, Shuttleworth of Ilacking, made this pew, and here will I sit when I come to church. And my cousin, Trowell, shall make one behind me if he chooses, and my sonne, Sherbourne, shall make one on the other side, and Mr. Catterall behind him, and for the residue the use shall be first come, first speed, and that will make the proud wives of Walley rise betimes and come to church." And such is the fashion of the pews at the present day. At St. Lawrence's Church, Reading, there is an entry, under date 1547, for reforming the mayor's pew for the magistrates' wives. In 1738 the church-wardens decreed that women occupying seats in certain favored positions should pay 4d. each. For still better positions near the pulpit the charge was 6d. At Dorchester, in 1625, Robert Polden's wife is noticed as paying 1s. 6d. for a seat in the "women's square." So there is reason for believing that originally pew-rents were charges made every time particular seats were occupied. It is easy to see how such a charge would become commuted to a yearly rent when persons wished always to have a right to a particular pew. — *Church Family Newspaper*.

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SUMMARY:—

Heavy Reduction in Price of our International Edition made Possible through the Abandonment of the Imperial Edition. — Reasons for this Change. — The New York Custom-house Competition Award. — A Natural Cement Rock found in Florida. — Lead-poisoning by the Lowell, Mass., Water-supply. — How Busy and Dull Times affect Fire-losses. — Condition of the Central Park Obelisk. — The Labor Vote in Massachusetts. 41

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House and Stable of J. D. Oliver, Esq., South Bend, Ind.

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THREE or four months ago we gave private notice to subscribers to our Imperial edition that, probably, with the close of the year that edition would be discontinued, and we now make public confirmation of that statement, and next year shall issue only the Regular and the International editions. The reasons for taking this step are somewhat as follows: For ten years we have, in the International edition, maintained a journal of which the subscription-price was higher than that of any other publication in the world, and the fact that it has been maintained through the hard times and the war times of late years proves that it has been worth the price, great as it was. The International edition was founded, and its price set, on an experimental basis, but as the price was known to be an abnormally high one, it was the intention to lower it at the first opportunity. Circumstances of one kind or another have always prevented us from carrying out this amiable intention until now. On analyzing the situation, it was found that the existence of the Imperial edition stood in the way of making such a reduction in the price of the International as could result in anything but a sheer loss to us, for when it comes to paying an exceptional price, as many men are willing to spend twenty-five dollars as twenty-two or even twenty. Moreover either of these prices was twice that of the Imperial, and we could hardly expect enough subscribers to that edition to take advantage of so slight reduction as would make good to us the great aggregate loss. The Imperial edition has always been a snare and a stumbling-block, since it afforded a middle-term between the Regular and International, forming a seeming measure of quantity for value and establishing a ratio which it was very awkward to maintain, seeing that the component parts of the International editions are constantly varying in all but mere manufacturing cost, which cannot, of course, be made evident to unthinking subscribers. Moreover, it effectually blocked the possibility of allowing the Regular edition to grow and expand, since it was not possible to add to the interest of that edition without bringing it in value too near the

higher priced one. Believing that all subscribers to the Imperial would take the International if they could feel it to themselves worth the money, it seemed obviously unnecessary to maintain the Imperial edition if the better one could be brought within the reach of the subscribers to the latter. The solution, then, appeared to be to substitute for the two expensive editions we have published hitherto, a single edition that should be acceptable to both groups of subscribers. But what we propose is not the substitution, at a lower price, of a third and unknown thing for two things that are already known; it is merely the abandonment of one of them and the continuance of the other — the International — unchanged in all but price. The Regular edition, as we said before, will be continued unchanged in price and make-up.

IT is a gratification to us that more than half of the Imperial subscribers who have replied to our inquiries have assured us of their support in this new step, and we feel confident that those who are still in doubt, or who have already notified us that they must drop back to the Regular edition, will, when the time comes, send in their subscriptions to the International at its new price. This new price we have fixed for the year 1900, on a temporary basis, at sixteen dollars, or, for those who prefer to pay quarterly, at four and one-half dollars per quarter. As this rate implies a loss of nine dollars on each of our present International subscriptions, it implies reciprocally the necessity of having transferred to the International list one and one-half Imperial subscriptions, if even the *status quo* is to be maintained, and this fact we refer to each of the subscribers to the latter edition, and would, at the same time, point out that if our efforts to serve the profession during the last score of years have been merely mischievous, it is now possible to inflict a heavy punishment on us.

AS we recognize that there may be some Imperial subscribers who feel that ten dollars is full worth for any periodical, whatever its contents, we will try to make the change less unpalatable and will include with a full prepaid (\$16.00) subscription to the International edition for 1900, Part V of the "*Georgian Period*" — carriage unpaid — which is to be published about the first of the year.

WE are very glad to learn that the award in the competition for the New York Custom-house, notwithstanding the opposition of politicians, and of certain competitors, some of whom have already withdrawn their protests, while the others have explained that their objections related to the manner of making the award, and not to the award itself, has been confirmed by the Secretary of the Treasury, and Mr. Gilbert is already at work upon the preparations for carrying his design into execution. It is gratifying also to record that both the Philadelphia and New York Chapters of the Institute passed resolutions recommending the approval of the report of the jury of award; and not only the public, but the profession, will benefit by the honorable manner in which the law, and the agreement made with the competitors, have been sustained by Secretary Gage and his subordinates. Not the least of the advantages gained by this manner of treating the subject is that Mr. Gilbert enters upon his work entirely untrammelled by any promises, favors or influences whatever. He has no one to please or reward in writing his specifications or awarding his contracts, and, so long as he works under Secretary Gage, we do not believe that any material-dealer can have him dismissed if he does not set aside the specifications to use his goods; and, apparently, almost for the first time, a great public building for the United States Government is to be carried out with the same confidence, energy, economy and success that a private building would be. An example of such importance should establish in the public mind the value of the Tarsney Act, and place it beyond the reach of the politicians, who will

assuredly never cease their efforts to assimilate the building operations of the United States Government to those which have made the Albany Capitol and the New York Court-house a public scandal, so long as any hope remains to them.

A STORY is told about a new natural cement, discovered in Florida, which, as it seems to us, would need confirmation, if it were not that it is put forward under the honored name of Mr. Uriah Cummings, whose authority as an expert in natural cements no architect will question. According to the newspaper accounts, the new cement rock occurs in enormous masses on the Apalachicola River, near River Junction. When first exposed, the rock is so soft that it can be cut with a spade, but it soon hardens, and, when burned, is said to form the strongest natural cement known. Its most remarkable peculiarity, however, is that both the rock and the cement made from it are "as white as the finest marble." Considering the urgent demand which has been made by the profession for many years for a strong white cement, which could be used for laying and pointing masonry of light-colored stone, and for making artificial stone of agreeable appearance, it is strange that this product should not have been sooner made known, especially as it is said that "Bricks made of one part of this cement and two parts of white sand are in use in many buildings in the South, and they are extremely hard and beautiful." Considering the facility with which the deposit is worked, and the large amount of it, two billions of barrels, according to Mr. Cummings, being exposed in a single one of the many beds which are said to exist in Florida, the price demanded — a dollar a barrel for the raw material, before burning — is rather ridiculous, and would certainly prevent it from having more than a very limited use; but a cement of the sort described, well burned and uniform, and sold at a reasonable price, would be sure of an extensive market, not only in this country but abroad.

THE Massachusetts State Board of Health has found that the water supplied to the public in the city of Lowell, which is drawn from three wells, acts strongly upon lead, and there have already been many cases of lead-poisoning among the citizens. One-fourth of the practising physicians of the city who replied to the inquiries of the State Board reported that thirty-three serious cases had occurred in their own practice within the eight months preceding the preparation of the Report of the Board, besides many of less importance, in which the symptoms had been removed by discontinuing the use of the water. By testing water drawn from house pipes, an average of one-quarter of a grain of lead per gallon was found, where the houses were supplied from two of the wells. The third well, or group of wells, appears to furnish water which acts less rapidly on lead than the others, but even this water would dissolve a dangerous amount if left to act upon lead house pipes over night. As one-quarter of a grain per gallon is eight times as much as the quantity of lead regarded by the State Board as dangerous, and as this proportion is likely to be very much increased in the water first drawn in the morning, which has been standing in the warm house pipes all night, the State Board has called upon the local authorities to investigate the matter at once; and, meanwhile, advises the people of Lowell to abandon the use, for cooking or drinking, of the water from the so-called Cook and Hydraulic wells, and, in using water from the third, or Boulevard well, to be careful to let the water from the house pipes run to waste for awhile before drawing any for cooking. As the analyses are not given, it is not easy to understand the cause of the trouble. A very pure water will dissolve lead with dangerous rapidity, but most well-waters in Eastern Massachusetts contain sulphate of lime, which soon coats the inside of lead pipes with an insoluble skin, sufficient to protect the metal from further corrosion.

THE New York *Evening Post* makes the curious observation that losses by fire are generally greater in periods of business prosperity than in dull times, so that insurance companies make money when other people lose it, just as lawyers are reputed to do. It explains this phenomenon by saying that when factories are running day and night to fill orders, and wholesale dealers are packing and shipping goods in haste, less care is taken about small things, and a match, which no one now has time to pick up, or an oily rag, which

the men are too busy to put away, produces its natural effect. Another interesting fact that insurance men have noticed is that the absorption of a manufacturing concern by a trust increases the fire-hazard. Of course, the trusts do not purposely set fire to their plants, but the management of a factory by a salaried agent is likely to be less careful and anxious than that of a man whose future, and that of his children, depends on attention to every detail of the establishment, and it is a matter of record that several manufactories in which a fire had never occurred before have been destroyed soon after their absorption by a trust. For all these reasons, and, perhaps, also for others, the fire-loss this year has been much greater than for the corresponding period of last year, the increase having been, so far, at the rate of more than a million dollars a month, or nearly forty thousand dollars a day. In the end, of course, all this, and as much more, to pay the expenses of the insurance companies, comes out of the pockets of the community, and the vacancy left by the withdrawal will surely be felt sooner or later.

THE condition of the obelisk in Central Park, New York, again excites apprehension. The coating of paraffine which was applied some years ago probably did some good, but no one knows how much effect it had; and, in any case, it is wise to find out whether it needs a fresh application, and an examination has been decided upon. Meanwhile, an interesting story is told about it, which is, so far as we know, new to the public. It seems that when the stone was first brought from Egypt, General di Cesnola, who was then, as now, Director of the Metropolitan Museum, and who knew from experience the disintegrating effect of atmospheric influences on such objects, proposed that it should be set up in the central hall of the Museum building, which is four or five feet higher than the obelisk, and where it would be completely protected from the weather. Commander Goringe, who brought the obelisk over from Alexandria, objected to this proposition, declaring that General Cesnola wanted the stone "to advertise the museum." Naturally enough, the Museum authorities did not care to press the subject further in the face of opposition of this kind, and the obelisk was set up out of doors.

A CURIOUS state of things prevails in "labor circles" in Massachusetts. The Democratic party of that Commonwealth chose, as its nominee for Governor this year, Mr. Robert Treat Paine, Jr., a member of an old and rich Boston family, which has for many years been identified with public-spirited and charitable undertakings, while, for other State offices, it nominated a miscellaneous assortment of persons, presumably in the hope that they would bring to the support of the party the votes of the cliques to which they belong. Among the nominees was Mr. Harry Lloyd, the "Silver-Tongued Carpenter," a well-known "organizer" of trade-unions, and labor-agitator generally, who was proposed for State Treasurer. As Mr. Lloyd is a distinguished "champion of the workingman," it is hardly necessary to say that one of his principles is that "organized labor" should be given preference in employment; or, to put it more simply, that no workingman who does not belong to his pet societies should be allowed to earn a living. What Mr. Paine's views on the subject are no one seems to know, but it appears that he is building a large house for himself in the Boston "Fens," and certain of the labor champions, rather imprudently, undertook to ascertain his sentiments, perhaps with the intention of correcting them, if they should consider it necessary, before the election. They, therefore, communicated with him, about a month ago, requesting him to insert a clause in the contracts for his house, to the effect that "organized labor" should be employed in it. The answer that he made to this communication has not been given to the public, but the newspaper reporters are gloomily informed that it was "unsatisfactory." Worse than this, it appears that non-union men are actually at work in the house, and the Central Labor Union of Boston professes to feel not only dissatisfaction, but indignation, on this account. If Mr. Lloyd, or his friends, in their indignation at Mr. Paine's conduct in allowing citizens unprovided with their certificates to work in his house, gave orders to the members of the unions not to vote for him, the difference between his vote and that cast for Mr. Lloyd would give a tolerably accurate measure of the voting power which the labor organizers in Massachusetts can actually control.

SANTA MARIA DEI MIRACOLI AND THE LOMBARDI.
—IX.

S. Girolamo, in the Church of S. Stefano, Venice. P. Lombardo, Sculptor.

PIETRO made the palaces of Pola and Bettignuoli at Treviso in the last decade of the century, and these various works occupied him for some years. He did not return permanently to Venice until 1498 or 1499, when he was appointed Prothomaestro of Works at the Ducal Palace, vice Antonio Rizzo. Before leaving Treviso he executed an altar by the main door of San Niccolò, upon which is the inscription: "Franciscus Bettignuolo, mortuus est 1491."

A number of inferior sepulchral monuments in the various churches of Venice, whose form and decoration follow more or less closely the Lombardi treatment, are generally ascribed to the school, but certain of these, executed even in the first years of the Cinquecento, disclose leanings toward the later Renaissance which put them outside of Pietro's influence.

In this connection Dr. Meyer says of the Melchior Trevisan († 1500) monument in Sta. Maria dei Frari, sometimes ascribed to the Lombardi, that "it might be rather called an early example

of the 'joiner' style, full of a mannerism from which Pietro Lombardo and Antonio Dentone were far removed," adding that it belongs to some artist of the High Renaissance school, perhaps to Lorenzo Bregno, mentioned by Sansovino as the sculptor of the Benedetto da Pesaro († 1503) statue at the Frari, and that of Naldo at SS. Giovanni e Paolo.

Dr. Meyer's scholarly monograph, "*Das Venetianische Grabdenkmal*," ends with a discussion of the famous tomb of the Doge Andrea Vendramin, in the Church of SS. Giovanni e Paolo, which he pronounces the completest of all Venetian and one of the finest of all Italian sepulchral monuments. Vendramin died in 1474, but the monument was, according to Cicognara, commenced some years later. There is also an admirable study of this splendid grave in a monograph by Th. Elze, Vienna, 1882, entitled "*Bilder aus Venedig*, No. 6 — *Ein Grabmonument*."

Dr. Meyer compares the Vendramin tomb with that of Niccolò Marcello beside it, and finds certain mistakes of proportion in the latter greatly bettered in the Vendramin by a closer adherence to scale. In the Vendramin, he says, "all architectural and ornamental details, as well as the figures, are of greater importance, while everything is subordinated to a fine feeling for the effect of the whole. . . . The architectural or constructive character is accentuated, yet the decoration has its fullest right, which is not altogether the case in some later examples of such work."

Without going into a technical discussion of this superb monument it may be as well to remind the reader that, while generally accredited without reserve to Alessandro Leopardi, it is unmistakably a piece of Lombardesque architecture. Certain analogies to the socle of the Colleoni statue, notably in the columns to the central niche, declare the hand of Leopardi, and in the character of the sculptured leafage and decorative portions there is an interesting relationship to the ornament of the famous bronze standard-bearers before Saint Mark's, "not so much," as Meyer remarks, "in the ornament as worked-out, but as it is shown in the sketches for the flag-staff-bases."

The scheme as a whole, while marking a step forward in membering and distribution of parts, must, however, be classed among the examples of Pietro Lombardo's development of mural tombs.

The greater part of the figure-sculpture is probably from the atelier of the Lombardi. Tullio signed the "Adam," which was sold, and is now at Frohsdorf, near Vienna, while the companion-figure, "Eve," is at the Palazzo Vendramin. Cicognara's "*Storia della Scultura*" shows the original appearance of the monument and the justice of giving Tullio credit for the principal sculptures: the Adam and Eve; the two men-at-arms in Roman soldier dress; the Virtues standing in the niches, five on the front and two at the ends of the sarcophagus; the shield-holders, who were pages, like those of the Marcello and Mocenigo, half-nude, but wearing a less jaunty air, and in pose suggesting somewhat more of the solemnity of death and judgment; and, finally, the upper sculptures of the monument. Truly, he leaves little, at least of sculptured parts, to Leopardi.

Meyer takes the "Virtues" — which are indeed a survival from the more devout days of the Trecento — the angels around the bier, and the relief in the lunette, to express an increase of religious feeling. One agrees with him that this work has achieved an harmonious

development of the decorative tendencies of the period, "until now delayed by a struggle between profane and religious elements," — and by no means arrived with Leopardi, one might add, — but surely, with the exception of Tullio's "Angel of the Annunciation and kneeling Virgin" in the upper side-panels, which are simple and reverent, there is little to mark a return to religious inspiration. The relief in the field of the arch, the Virgin and Child between two saints who are commending to her good offices the Doge and his son, kneeling at the sides, has a bit more humility than the haughty statues of the Marcello and Mocenigo, but the Duke is splendid in his robes of state, and the impression is given that his greatness takes no meaner place in the realm above than was its proud due amid the pomps of his earthly principedom. The critic in search of other than mere pagan motives may find in the right hand, raised in the gesture of blessing, of the deliciously-modelled Amoretto in the medallion above the cornice, some naïve religious intent, but he will scarcely claim for the voluptuous sirens who flank this crowning-piece very much of sacredness, nor find the wings outspread from their lovely shoulders an adequate offset to the mythological suggestiveness of their scaly terminations. Rather let us be content with the Attic elegance of conceit and rendering in this most sumptuous sepulchre. Indeed, in a certain dreamy tenderness in some of these dainty heads, in the marvellous finish of the reliefs, those in the socles of the columns, cut with the elegance of an antique gem-cutter's work, and of a mastery equal to those sculptures of Santa Maria, whose beauty Perkins is so loth to credit to Tullio's chisel, in the graceful playfulness of the "putti with sea-monsters" of the side-panels and medallions, the sculptor, be he Lombardo, be he Leopardi, has given us exquisite, albeit none too Christian, art.

Of those matronly muses on the side pedestals, most classically draped, but of a heaviness which sets them apart from the rest, nothing need here be said.

Another collaboration of Alessandro Leopardi with the Lombardi is the great monument to the Cardinal Giovanni Battista Zeno in the Zeno Chapel at Saint Mark's.

Here again the critics find themselves at fault in attempting to assign the different parts of the work, and there is conflict among the authorities on this subject. Perkins writes: "The bronze monument to Cardinal Zeno is said to have been made under Pietro's superintendence, but documents prove that its artists were Paolo Savio and Pier Zuan Campana [a pupil of Alessandro Leopardi's], who in 1515 cast the heavy and uninteresting statues of the Madonna and Child and SS. John and Peter for the altar."

Now, it is just these last which Burckhardt, an authority by no means to be ignored, assigns to either Pietro or Antonio Lombardo, in alluding to their "fine heads." Burckhardt credits the "six lovely Virtues" on the sarcophagus to Leopardi, and adds: "The celebrated Madonna della Scarpa, this pure conception of the golden age of Giovanni Bellini, should be Leopardi's. The Infant, seated upon the Virgin's knee and making the sign of benediction, is of an exquisite beauty."

So much for the critics! The facts as found in the records seem to be as follows: The tomb was begun in 1501 by Leopardi and one of the sons of Pietro Lombardo. Leopardi withdrew in 1505. The monument was finished in 1515. So that, to whomsoever may belong



Side of Fireplace in the Stanza of the Scarlatti, Ducal Palace, Venice.
c.1.0 Lombardi School.

the original scheme, the execution of the work, its decorative and sculptural details, must, if only because of the greater length of time they were engaged upon it, be reckoned largely to the account of the Lombardi. Selvatico maintains in his "*Architettura di Venezia*"

¹ Continued from No. 1245, page 36.

(Venice, 1847), on page 1901, that the work was begun by Leopardi and Antonio Lombardo, who shortly quarrelled, when Leopardi was retired and succeeded by Alberghetto and della Campane, to assist Antonio; that, the work still not progressing satisfactorily, Pietro Lombardo was called in to superintend, and designed certain figures which were cast in bronze by Campane.

In the scheme for this monument, a great catafalque, or bed of state, standing free in the centre of the chapel, we have a return to the mediæval type of isolated tombs, and it is the only one of the kind and the only great work in bronze upon which the Lombardi were engaged. As to the fine figure of the Cardinal laid upon the bier in his sacerdotal vestments, it might be pointed out that the rich textures and florid decoration of the robes, most elaborately detailed, was a portion of the work well suited to the especial genius of Leopardi for sculpture in bronze. The recumbent figure of the doge in the Vendramin tomb was doubtless his also. It was this last, I think, which Mr. Ruskin discovered to have only one side to its head, and he heaps honest scorn upon the fraud.

Sculpture in bronze, we have noted, reached great excellence in the latter half of the Quattrocento from the stimulus of Donatello's work in the Cappella del Santo of Padua. Bellano and the talented Rizzo handed on the traditions of Donatello's Paduan school.

Gauricus, who wrote in 1503, gives details of the art of bronze-founding. He does not mention Leopardi, but praises Tullio, who was his close friend. Gauricus thought Tullio the greatest sculptor who had yet lived, and rates Antonio, as well, among the first.

The "*de Sculptura*" of Gauricus is one of the few Renaissance works on sculpture, the only other writers on the subject, before Cellini, being Leon Battista Alberti, "*de Statua*," and Porcello de' Pandoni, who wrote a treatise on the founding of metals. Alberti's commentaries on sculpture appeared later than, though his essay "*de Re Aedificatore*" preceded, Gauricus's book, whose German translator, Brockhaus, says that his work was already widely known before those of Lionardo da Vinci and of Alberti had come under notice. Gauricus was very young, had barely attained his majority at this time. He was a very thorough-going "Humanist." He rejects Alberti's claim that morality is essential to the artist. Alberti was a churchman, though first of all an artist, impassioned lover of antiquity and patron of culture. Gauricus set store by breadth of learning, antiquarian, historical, varied culture, gifts of appreciation and expression, comprehensive intelligence.

"Only the most unlimited understanding can fit the sculptor to portray humanity in body and in soul . . . who rests his effort upon the attainment of mere skill of rendering stands not upon the higher plane . . . the soul of the artist must grasp what it would embody in a work of art . . . knowledge and culture are *sine qua non* for the sculptor as for the painter."

Does he grant to Tullio these attributes in naming him the greatest? Perkins, at least, holds other views. He finds Tullio "cold and monotonous, his compositions rarely happy." The two large reliefs in marble in the del Santo, signed "Opus Tullii Lombardi, 1525" — and this commission proves that his reputation was widespread — are pronounced by Perkins, "stiff, cold and awkward," and compared, very much to their disadvantage, with the vigor, clearness and incomparable style of Donatello's treatment of the same themes upon the high-altar.

Their subjects are two miracles of San Antonio of Padua.

Antonio Lombardo's only signed work, in the same chapel, a large relief setting forth another miracle of the Saint, is pronounced second rate.

To the "*Cicerone*," however, this work recalls attic funerary reliefs, and appears, though of a perhaps exaggerated measure and calm in the figures, of extraordinary beauty and perfect execution.

Burckhardt, in fact, considers Antonio's manner and technic superior to Tullio's, with whom Antonio collaborated, he thinks, many works ascribed entirely to his more famous brother.

A comparison of the reliefs of the del Santo would seem to warrant this opinion. Antonio's, despite its cold classicism, is the best of the lot in conception and rendering. Antonio was at work here in 1505.

Tullio's are devoid of life, and are of a stiffness and frigidity almost irreconcilable with his early crisp boldness and spirit. There is much sameness of treatment in the three reliefs. Antonio's formalism is the key-note of them all. A comparison of details discloses a certain perfunctory imitation, suggestive of much shopwork and the touch of 'prentice hands. Tullio was aging when this work was finished, in 1525, and he died, according to some authorities, five years later at Venice, where he lies buried in the Church of San Stefano, as the records of the church attest. Undiscoverable in these reliefs the elegance and originality of the ornament in Santa Maria and upon the tombs! Here we have rather, indeed, the artist of those clumsy and labored angels at San Martino, and the stiff and expressionless work of the "Crowning of the Virgin" in San Giovanni Crisostomo, which date from about the same period.

Pietro was the inspiring genius in this group of sculptors. Where his master-mind was no longer in the lead there seems to have remained but emptiness. Witness the lack of movement, of expression, of character in these signed works of Tullio's. Where Pietro has set his name we have a living art. The tomb of Dante at Ravenna, while in no sense equalling his work elsewhere, has thought and dignity. The portrait-relief, evidently taken from a view of the death-mask, has a quiet force and fitness. The signed

statues at San Stefano, San Giralomo and the others have a bold and impressive character, and in the draperies an artistry less Classic — indeed this sculpture sounds a Gothic echo — but far more living than we find in the signed works of his sons.

Pietro was the master, the actual creator of all the great architectural achievements of the Lombardi, and in most part the real executant of some of the best figure-sculpture of their production.

A. B. BIBB.

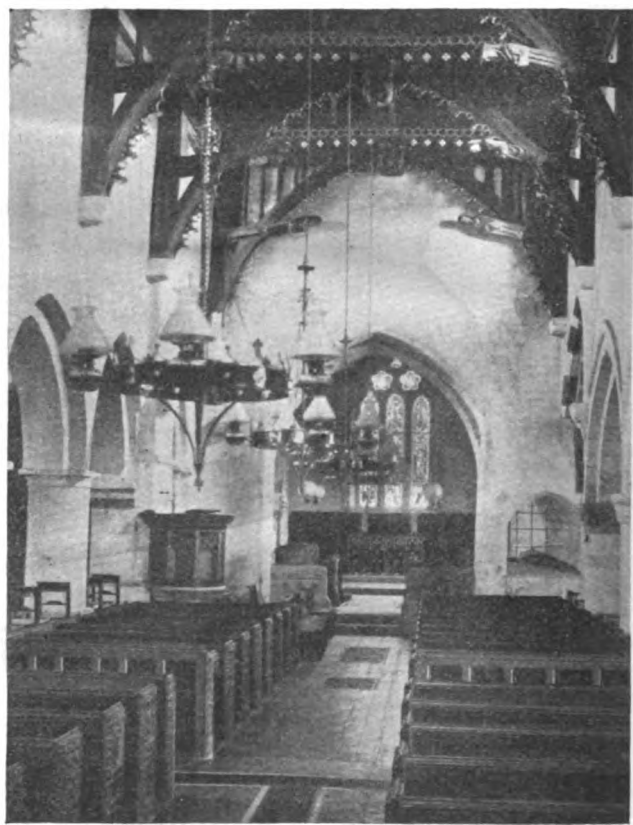
[To be continued.]

BERE REGIS, DORSET, ENGLAND.



Bere Regis Church.

READERS of Mr. Thomas Hardy's "*Tess of the D'Urbervilles*" will remember the scene of the arrival of the heroine and her family at "Kingsbere," the ancient home of their ancestors, and how, unable to find a lodging, Tess sets up the four-post bedstead in the churchyard, over against the wall, where, upon the opposite side, rests the altar-tomb of the Turbervilles, now denuded of its ancient brasses. The monument is one of three fine canopied tombs of Purbeck marble left in the church, by destroyers and restorers, the latter, in the shape of the late Mr. Street, being answerable for some vandalisms, as well as some legitimate restorations. For instance, the sacristan takes pride in telling you that Mr. Street, finding fragments of Early English mouldings built into the wall of the south



Bere Regis Church.

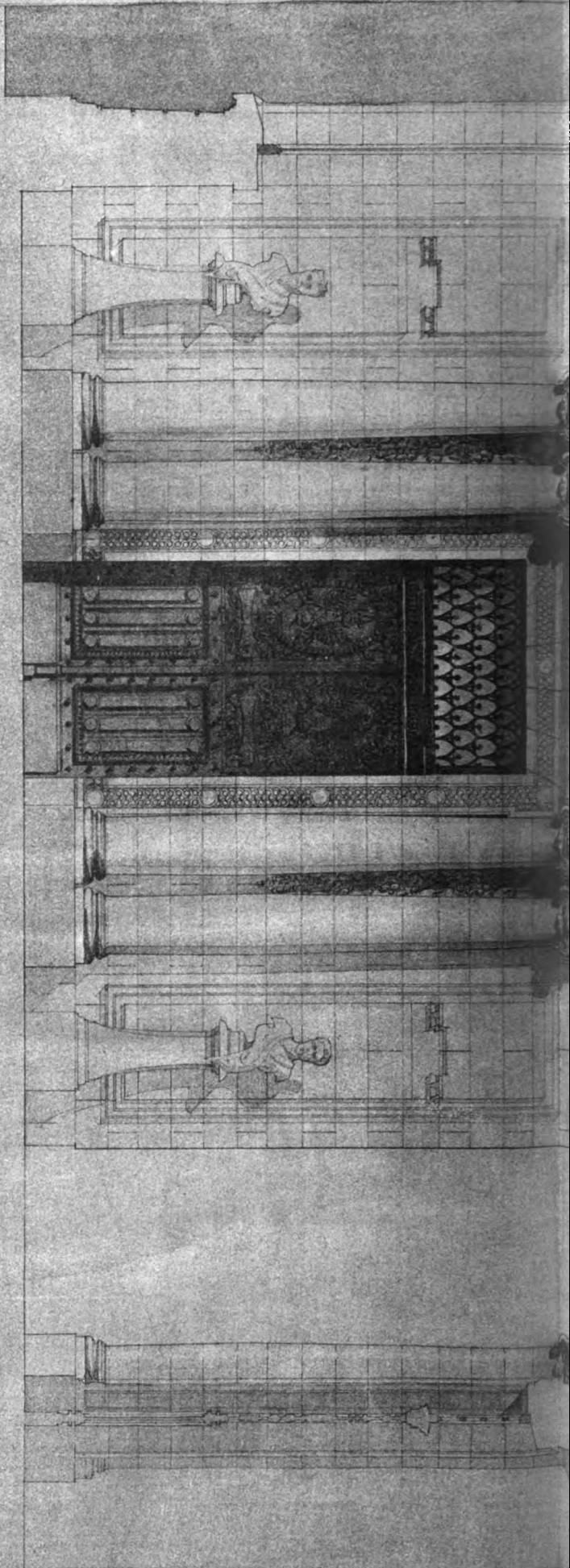
aisle, carefully demolished the Perpendicular window, in order to "restore" the Early English tracery; in other words, he built a new window in that style, instead of leaving one which had been erected in the latter end of the fifteenth century.



TOMB OF THE DOGE ANDREA VENDRAMIN, IN THE CHURCH OF SS. GIOVANNI E PAOLO, VENICE.

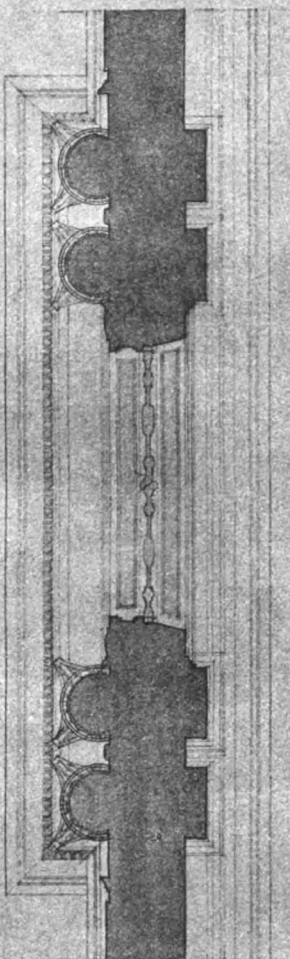


HOUSE OF J. D. OLIVER, ESQ., SOUTH BEND, IND.
CHARLES A. RICH, ARCHITECT.



ELEVATION

COUPE



PLAN

ECHELLE

DE 0 M. 04 PM

Louis C. Spiering
Paris de 1871



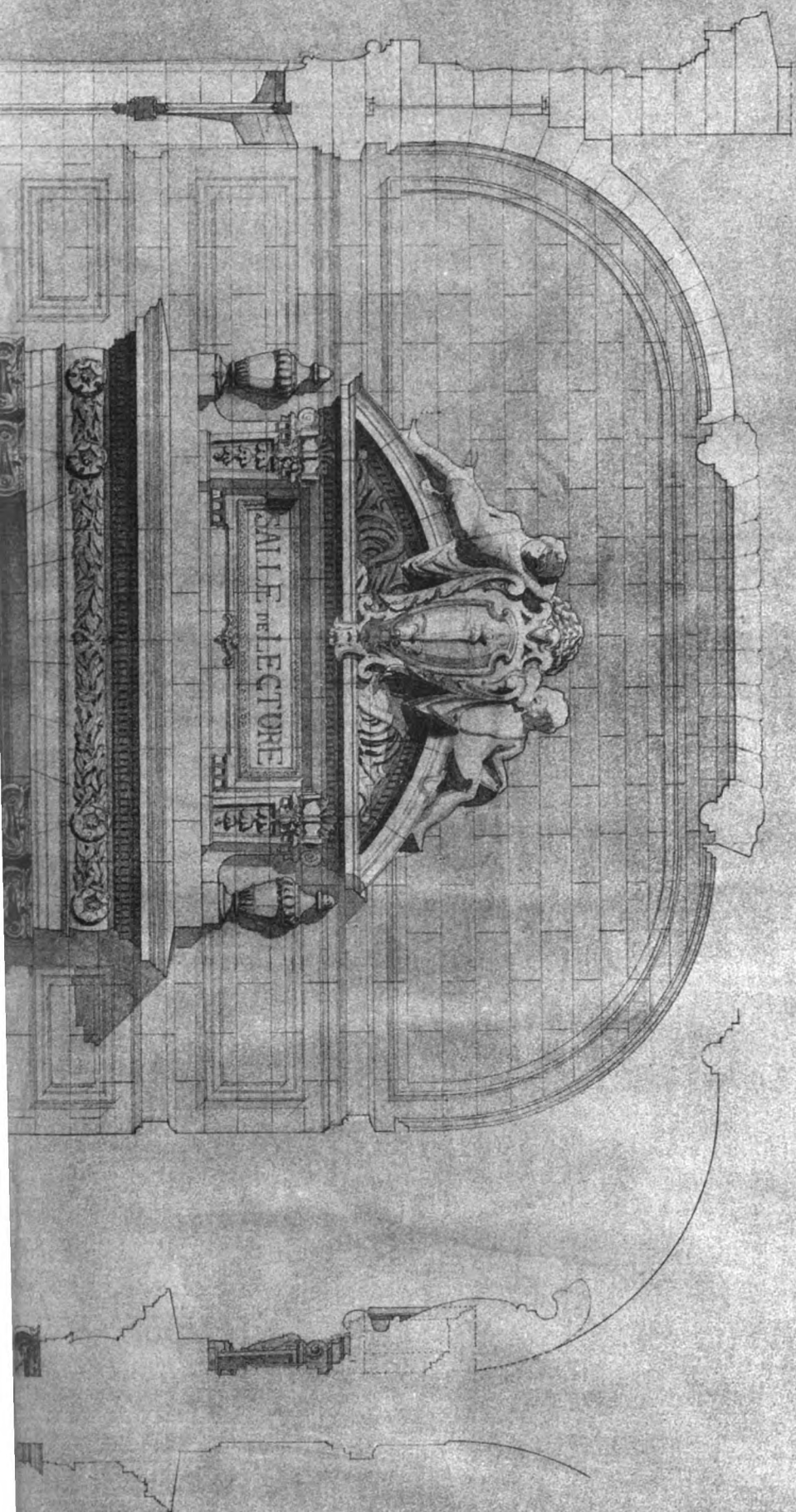
AMERICAN ARCHITECT AND BUILDING NEWS.

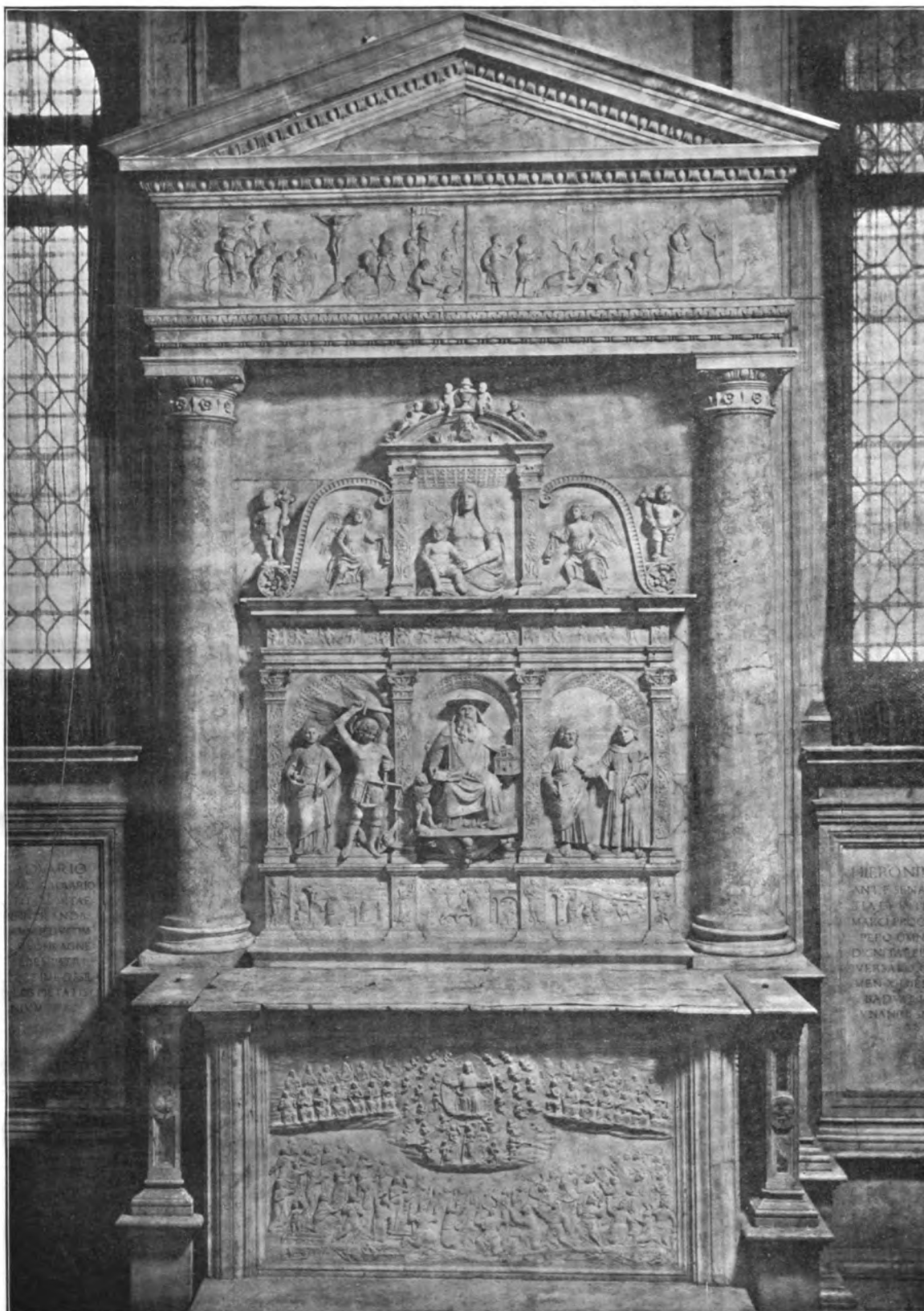
NOV. 11. 1899.

NO. 1246.

CONTENTS 3000 OF THE AMERICAN ARCHITECT AND BUILDING NEWS CO.

PORTE INTERIEURE DE BIBLIOTHEQUE





MARBLE ALTAR IN THE GIUSTINIANI CHAPEL, CHURCH OF S. FRANCESCO DELLA VIGNA, VENICE.



TOMB OF CARDINAL G. B. ZENO, ST. MARK'S, VENICE.
A. AND P. LOMBARDO, SCULPTORS.

Kingsbere is said to have been the home of Elfrida after the murder of her stepson, the Saxon King Edward, at Corfe Castle, and it also claims to be the scene of the beating of his stepbrother, Ethelred, by his affectionate mother, with wax candles, because he wept at the memory of the murder, although he profited thereby.



Athelhampton Hall.

Ethelred is said, not improbably, to have hated wax candles ever after.

A barn is shown which has been built of fragments of the old house which, later on, was occupied by King John after the failure to invade Normandy. He landed at Studland, and passing on to Bere, caused a crucifix to be set up in "our chapel." He taxed the people, cleric and lay, to the amount of £20,000 in our money; and very possibly the church, already built, may have been enlarged by him. It is of the transition period, with obtusely pointed arches springing from heavy Norman pillars and decorated with good mouldings of nail-head pattern.

Upon one of the capitals is a representation of a hunt, and upon another, a dog holds a wolf's head by the ear. The grotesque heads at the corners represent the gifts of speech and sight — so we are told; but one is another version of the "tooth-ache" capitals at Wells Cathedral, and the other represents a man shading his eyes with one hand. The arms certainly do not start from the usual part of the body, but the sculptor probably had no idea of thus representing the arms and hands of the Deity opening the mouth and giving sight to the eyes. The early carvers were probably humorous persons, who put their quaint ideas into stone, without any very deep or abstruse symbolism.

But the glory of Bere is its timber roof, which tradition assigns to Cardinal Moreton, who was born "not far from a certaine towne called Beere," and was attainted after his flight from the Battle of Towton as John Moreton, late parson of Blokesworth (nearby). He probably placed the roof in the church when Archbishop of Canterbury, for a shield in the centre bears his arms quartered with those of the See of Canterbury; and the supporting figure opposite represents a cardinal in red robe and hat. In his will he left money for a priest to say mass in the church for his soul and the souls of his family. He it was who caused the cessation of the Wars of the Roses by promoting the marriage of Henry VII and Elizabeth of



Athelhampton Hall.

York; and here on the bosses of Bere Church we find the Tudor rose in profusion. The terminations of the hammer-beams are wrought into full-length figures of saints. At the last restoration the roof was recolored. The seat-ends are finely carved; a few of them are dated 1547, and one is inscribed "John Day, Warden of this

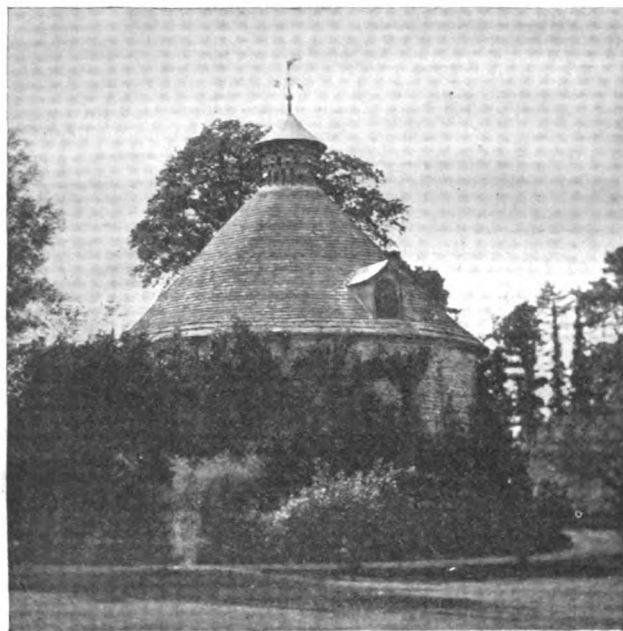
Parys." There are five bells, the oldest dated 1604, the latest, 1709. One has the legend: "Although that I am but small, yet I be hard above them all." The font is a round bowl ornamented with a rudely-cut interlaced arcading of round arches, beneath a band of stars.

In 1269, the manor of *Kingsbere*, or *Kyngebere*, as it was then called, passed into the hands of the Abbess of Tarrant, and with it a fair, a market, a free warren, and the whole forest of Bere. The last abbess, Margaret Russell, desired, by will dated 1567, to be buried in the church where her predecessors were laid, and it is said much of the south aisle was built of fragments of their tombstones. The crosses built into the porch are probably also of the same origin.

Many epitaphs remain, such as that of the couple who had "isshew of their bodys eight sonnes and eleaven daughters." Turbervilles abound, from the John who married a daughter of Viscount Howard in 1633 to the one (another John) who was educated at Winchester and New College, Oxon, and became a monk and Bishop of Exeter. Later, he was deprived and retired into private life. A Robert Turberville (the first of the family was named Briarius de Thorberville) armiger had a fine Latin inscription ending, "*anime propicie'et clementissimus Christus Jesus. Amen.*" And there are many Turberville baptisms, marriages and burials in the register, as well as shattered epitaphs on the pavement.

Readers of "*Tess*" will also remember Alic Turberville lying down upon the old altar-tomb after the manner of the effigy which had once been there. This is a fine Purbeck marble-canopied tomb shorn of its many brasses, only the matrix telling us of its former richness.

The old Manor House of Athelhampton is a fine specimen of Tudor architecture. Tradition gives the place a still older origin, possibly Saxon; Aethelhelm, Earl of Dorset, who in 837 collected a



Pigeon House, Athelhampton Hall.

body of Dorsetshire men to fight the Danes at Portland, and King Athelstan both being claimed by antiquaries as the founder of the Manor. In Henry II's reign it belonged to the de Pydels, and became, later on, by marriage, the property of some Martyns, who were descended from one Martin of Tours, a general under William the Conqueror. The name Pydel, or Pidele, has become corrupted into Puddle, a river and a whole series of villages near by bearing that name tacked on to some sort of prefix. The connection of Martin of Tours with the family gives the clue to the marble bas-relief over the fireplace of the great hall — St. Martin, Bishop of Tours, cutting his cloak in half for the benefit of the mendicant. One of the party going round the house gave a most delightful explanation of this. "St. Martin, Archbishop of Canterbury, you know, dear. No, I think it is from Chaucer's '*Canterbury Tales*'; you know — the abbess riding her horse or donkey; that's it." The same lady, although she had never read "*Tess*," intended to do so, because, "you see, it is one of —'s 100 good books. . . ." An ominous whisper succeeding to this statement, she venturously continued: "Oh, my dear Ethel, you must be mistaken; I am sure I have seen it in the lists of 100 good books." As I am sending photographs it is unnecessary to speak of the exterior of the house, except the pigeon-house, which is divided inside in rows and rows of square holes where the birds nest — a real *colombarium* rarely met with in these days, and large enough to hold hundreds of pigeons. The garden is of the old-fashioned formal kind, surrounded by walls, and with steps and iron gates leading from one garden to another. Over the gates is the shield bearing the Martyn arms — a monkey chained, with two chained apes as supporters.

The east wing is the oldest part. The hall has a fine timber roof of four bays, with hammer-beams and supports springing from stone corbels. The gallery is modern. So, too, is much of the panelling all over the house. The hall has a battlemented semi-octagonal bay-window reaching to the top of the wall, with windows filled with fragments of old stained-glass. A little polygonal chapel leads out of a bedroom, in which is a magnificent carved-oak bedstead of the fifteenth century; and all over the house are specimens of old furniture, brass vessels, pewter, tapestry, needlework, pictures on silk and satin, etc., the present owner being engaged in making it a unique fifteenth-century manor house. S. BEALE.

CHICAGO'S DANGER FROM THE LAKES.

PROF. G. K. GILBERT, who has for some years maintained that the level of the Great Lakes of America is slowly altering, has just reverted to the subject in greater detail, says the *London Standard*. He states that the region is turning upon an axis, the land rising on one side and sinking on the other; on the one hand the shore, so to say, encroaches upon the lake, on the other the water upon the land. The process may be roughly illustrated by filling a saucer nearly full of water, and then giving it a gentle tilt. The fluid falls on one side and rises on the other, until at last it overflows. This axis runs diagonally across the region. On Lake Ontario the land about the village of that name is sinking; at Hamilton, on the western end, it is rising. On Huron, in Georgian Bay, it is also rising, but in the southwestern part of the lake, and at the southern end of Michigan, the contrary movement is in process. Chicago itself is thereby endangered, and Professor Gilbert threatens it, in about five centuries, with the fate which, according to Moore, has befallen the "towers of other days" in Lough Neagh. The subject has for several years engaged the attention of men of science in the United States and Canada; there is, indeed, no more interesting chapter in geology than the history of the great lakes of North America.

Professor Spencer, in a paper read eight years ago to the Geological Society of London, described the original state of the river basin of the St. Lawrence. Soundings in Lake Michigan have proved that, were it dry, it would be divided by a central ridge into two valleys—the northern communicating with the basin of Huron along the line still followed by the water; the southern draining along a buried channel into Saginaw Bay, on the southwest side of Huron. The two streams ultimately united on the dry bed of that lake, and then passed out to Lake Ontario, not by Detroit, Erie and Niagara, but by way of Georgian Bay, and through another buried channel which entered the lake a little east of Toronto. In those days, of course, the Falls did not exist, and even after the subsidence of the land about the upper waters of the St. Lawrence had formed the lakes, Erie did not at first send its waters northward from its eastern end to Ontario, but was drained by a river flowing southward to the Mississippi. The formation of Niagara was the result of later movements, as both Professors Gilbert and Spencer have pointed out, which did not even then cease. At various places around the shores of the lake lines of terraces can still be recognized which were fretted on the slopes when the waters stood at higher levels.

These terraces are not at uniform heights above the present surface, and, therefore, prove that a process of "warping" has been going on, or, in other words, that the upward movement has been unequal. For some little time it has been known that movement was still in progress, and we now learn that in some places, roughly speaking, toward the southwest part of the area, it is in a downward direction. This also is not without precedent. One of the most noted instances is on the shores of the Baltic. The southern part of Sweden, the district called Scania, is slowly sinking; the exact rate, perhaps, is not yet quite certain, but about Malmö it probably exceeds a yard in a century. In the more northern parts, however, the land has certainly risen during very late geological times, and is believed to be still on the move. Of course, if this tilting in the lake region continues, Erie will be once more cut off from Ontario, if not from Huron; it and Michigan will discharge their waters southward to the basin of the Mississippi. The drying-up of Niagara and the flooding of Chicago will be serious matters, but we may console ourselves with the reflection that neither will happen for many a long year, and that, when the time comes, American ingenuity will be equal to the emergency.

BOOKS AND PAPERS

FOR more than twenty years this country has been developing systems of construction which are supposed to diminish the chances of loss by fire. The fact that our fire-losses are increasing every year, and that we are annually having conflagrations more disastrous than in preceding years, does not alter the fact that we have some most excellent systems; systems which have been not merely developed by experience, but which have reached the point of formulation for publication. There have been many scattered

treatises upon the subject, appearing in the various architectural journals and proceedings of societies, but, as far as we can at present recall, the first complete work upon the subject to be put before the architects and constructors in this country is the book which has just appeared under the authorship of Mr. J. K. Freitag.¹

It is yet too early to make definite statements in regard to fireproofing as a science. The book before us shows, first, that a great deal of what has been wrought out in the shape of theory and practice in this country is an outgrowth of experimental knowledge rather than of scientific analysis. It seems very strange that we should have waited so long to make up our minds, for instance, that terra-cotta was an ample protection against fire, and stranger yet that the fire-resisting qualities of cement should have made their way to favor so slowly and with such a lack of appreciation. The book also shows that there is a decided lack of exact scientific knowledge in regard to fireproofing; that conclusions are based on experiments which are far from satisfactory as a rule, and Mr. Freitag, very wisely reasoning, does not commit himself to anything like authoritative statements. From this it is easy to appreciate another lesson of the book, that our real knowledge of the subject is in fact quite limited, and that, fourthly, the tests which have thus far been made have, on the whole, been of but slight value.

Now this seems discouraging on every account, but, as a matter of fact, the more one studies, the more one looks into the subject-matter of the work, the more one is forced to admit that though the fireproofing of the past has been a result of necessity rather than of scientific study, and though our object-lessons from actual knowledge have not given us all the data we want, we are perhaps none the worse off for lack of theory, and more ready, or at least ought to be more ready, to abandon our mere theories in favor of the results, however slight, of actual experience. Up to within a very few years ago there were so few instances of a fire having occurred in a building which could fairly be called fireproof, that though the systems then in the market seemed to offer ample protection they had none of them stood the actual test of a hard fire. Most of our experience has come within a very few years and includes substantially little more than the lessons of six buildings, the Home Life, the Vanderbilt and the Livingston Buildings, in New York, the Athletic Club and Schiller Building, in Chicago, and the Horne Buildings, in Pittsburgh. We hear so much nowadays about fireproof-construction that we are apt to forget that "ninety-nine per cent of the buildings erected throughout this country are as perfectly adapted to facilitate the destruction of buildings by fire as if they had been designed with that end in view." But, on the other hand, when it is remembered that the history of fireproof-construction is only slightly older than the history of the skeleton-construction, that steel beams have been on the market only fifteen years and that the first steel building was not erected in New York or Boston until 1893, we can feel that, after all, we have been able to assimilate the essential conditions pretty fast. Of the actual tests, aside from those afforded by conflagrations, there are only three enumerated by Mr. Freitag which are worthy of serious consideration. The first is the series of very careful, admirably devised tests which were made by Andrews & Jaques at Denver, in 1890; tests which, in their thoroughness and in the broadness of the lessons which they taught, have been worth more to the constructors of this country than almost anything which has followed since. A second series of tests was made by Geo. M. Hill in 1894 and 1895. The more recent, and numerically the most numerous, were made by the New York Building Department in 1896, and, while seemingly very thorough, as they are recorded in detail, it is doubtful if any of the New York tests have commanded a very extensive confidence on the part of architects or builders. The element of absolute impartiality, which gave such a value to the Denver tests, is so essential to a complete acceptance of the results thereof that any series upon which can be laid the heavy hand of political appointees, especially those in one of the most corrupt of modern cities, are hardly to be recognized as authoritative.

The author pays his respects to mill-construction, which, under the absurd designation of slow-burning, proved a delusion and snare to so many constructors, and he states that even the best examples have proved failures, for although an improperly-protected steel structure will not last as long as a carefully-constructed mill-frame, neither has any right to the term of fireproof, and it matters very little whether a building burn down in one hour or four, if it finally burns down; in fact, the odds are rather in favor of the quicker burning construction.

The chapter on the development of the skeleton-construction is very interesting reading in the light of our present knowledge, and the author calls attention to one point, namely, that the false fears in regard to the unequal rates of thermal expansion and contraction of masonry and steel were responsible for a great forward step in the matter of high-building design, an improvement which might otherwise have been unknown for many years, namely, the carrying of the walls or piers themselves on the steel columns, story by story, thereby dividing the piers into single-story lengths.

The chapter on fire-resisting design is one of the best, and, from an architectural standpoint, the most prolific in ideas, in the book. Mr. Freitag calls attention to the manner in which we carefully protect our iron, put shutters on our windows, build fireproof partitions, put in stand-pipes and water-curtains, and then render the whole

¹ "The Fireproofing of Steel Buildings." By J. K. Freitag, C. E. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1899.

nugatory by cutting wells for our elevators from bottom to top of the building, to say nothing of the open stair-wells, which seem to be inevitable. As he truly says, it must be admitted that, from the standpoint of fire-resistance, the ordinary location and design of these features is wholly wrong and entirely inconsistent with other methods of protection which are provided with great thought and care, and he advises some such arrangement as was suggested by Mr. Carrère, of putting the stairs and the elevator in a separate wing entirely enclosed by brick walls, which is quite the reverse of the usual practice, but in principle is none the less a necessity for absolute fire-protection. The Boston Building Law, by the way, has for many years required that stairways should be enclosed by brick walls. But as the law does not distinctly say how near these walls shall come to the stairs, an exceedingly elastic interpretation thereof has been willing to admit that the stairs were so enclosed, provided they were placed almost anywhere within the outside walls in a brick building, an arrangement which certainly does not make for much security in case of fire. We do not even make the best of our present arrangement of stairs and elevators. Mr. Freitag urges that each well should have at the top, if not, also, at intermediate points, an arrangement for a water-curtain or such sprinkler-pipes as would answer that purpose.

The chapter on concrete and composition floors contains a great deal of new matter. This department of fireproofing is changing so rapidly that it is pretty hard to keep track of all that comes into the market, but the author has managed to present pretty thoroughly what has been and can be done. He, very wisely we believe, limits himself carefully to a presentation of facts, and though some of his criticisms of existing methods are outspoken and emphatic, he has shown himself very conservative in his judgment and has taken what seems to be a fair measure of the possibilities which the market presents. As we have said before, it is not yet time for a critical analysis of fireproof-construction, but a work which presents so fully the accomplishments up to date, the possibilities of the various materials, together with very thorough reports of the important fires in fireproof buildings, as well as other direct and indirect tests, is surely timely and welcome, while the fact that it is written with evident extreme care, that he has refrained from making statements which need be seriously challenged, and that the work is the outcome of the practical experience of a man who is in the midst of this very construction, gives the work a value of which every serious constructor will wish to avail himself.



AMERICAN INSTITUTE OF ARCHITECTS.

THE Thirty-third Annual Convention will be held in the Monongahela House, Pittsburgh, Pa., on Monday, Tuesday, Wednesday and Thursday, November 13, 14, 15 and 16, 1899.

TUESDAY, NOVEMBER 14. — MORNING SESSION.

The members of the Institute will meet in the assembly-room of the Monongahela House at 9.30 o'clock; will register their names, and at 10 o'clock Mr. William J. Diehl, Mayor of Pittsburgh, will deliver an address of welcome, and the President of the Institute, Mr. Henry Van Brunt, will deliver the annual address, after which the Convention will be declared open for business and will listen to and discuss the general and special reports.

Luncheon will be served in the assembly-room at noon.

AFTERNOON SESSION.

Paper. — "Electricity in Modern Buildings," by E. Rowland Hill.

Excursion. — At 2 p. m. a special train will leave the Union Depot, taking the members of the Institute to the Westinghouse Electric and Machine Company's plant, which will be thrown open for their inspection on this occasion.

EVENING SESSION, 8 O'CLOCK.

1. Papers. — (a) "Influence of the French School of Design on Architecture in this Country," by H. L. Warren and R. A. Cram, Boston, Mass.; A. L. Brockway, New York, N. Y. A discussion will follow these papers, in which the following members have agreed to participate: Cass Gilbert, St. Paul, Minn.; R. D. Andrews, Boston, Mass.; F. M. Day, Philadelphia, Pa.; T. C. Young, St. Louis, Mo. (b) "Plate-glass," by C. W. Brown, Pittsburgh Plate-glass Company.

2. Visit to Allegheny County Court-house, which will be thrown open for the Institute.

WEDNESDAY, NOVEMBER 15. — MORNING EXCURSION.

A special train will leave the Union Depot at 9 o'clock for Ford City, where the works of the Pittsburgh Plate-glass Company will be thrown open to members of the Institute. On the return trip a luncheon will be served upon the train.

AFTERNOON SESSION, 3 O'CLOCK.

1. Papers. — "The Legitimate Design for the Casing of Skeleton Steel Structures," by H. R. Marshall, New York, N. Y.; C. H.

Blackall, Boston, Mass. A discussion will follow these papers, in which the following members have agreed to participate: R. W. Gibson, New York, N. Y.; J. M. Donaldson, Detroit, Mich.; Thos. H. Morgan, Atlanta, Ga.; R. H. Robertson, New York, N. Y.; W. L. B. Jenney, Chicago, Ill.

2. Reports of Special Committees.

3. Unfinished business of previous day.

4. Appointing of Committees to nominate officers of the Institute for the ensuing year, and to suggest a place in which to hold the next Annual Convention.

EVENING SESSION, 8 O'CLOCK.

1. Papers. — (a) "Architecture, the Sister Arts and Artistic Trades," by Levi T. Scofield, Cleveland, O.; (b) "Sculpture in its Relation to Architecture," by William Ordway Partridge, New York, N. Y.; (c) "Mural Painting in its Relation to Architecture," by Elmer E. Garnsey, New York, N. Y. A discussion will take place after these papers, the following members having agreed to participate: F. W. Perkins, Chicago, Ill.; N. Clifford Ricker, Urbana, Ill.; A. G. Everett, Boston, Mass.; A. O. Elzner, Cincinnati, O.; Alfred Stone, Providence, R. I.; G. O. Totten, Jr., Washington, D. C.

2. Visit to Carnegie Library and Art Exhibition, which will be kept open late for the occasion.

THURSDAY, NOVEMBER 16. — MORNING SESSION, 10 O'CLOCK.

1. Reports of Committees appointed at the opening session and their consideration.

2. Unfinished business.

3. Election of officers and selection of a place for the next Annual Convention.

4. Miscellaneous business.

5. Papers. — (a) "The Influence of the Jews upon Architecture," by J. W. Yost, Columbus, O.; (b) "Competitions," by William R. Ware, New York, N. Y.

Luncheon will be served in the assembly-room at noon.

AFTERNOON SESSION, 1 O'CLOCK.

1. Paper. — "The Manufacture of Steel for Building-construction," by F. H. Kindl, Structural Engineer, Carnegie Steel Company.

2. Excursion. — A special train of electric-cars will leave the hotel at 2 p. m. for the plant of the Carnegie Steel Company, at Homestead, which will be open for the inspection of Institute members.

EVENING SESSION, 8 O'CLOCK.

1. Unfinished business.

2. Dinner to the members attending the Convention given by the Pittsburgh Chapter at the close of the Convention.

Prompt and full attendance on the successive sessions at the hours indicated is requested, otherwise the business of the Convention cannot be fully accomplished.

Per order of the Committee,

GLENN BROWN, Secretary, A. I. A.

NOTE. — The Monongahela House will be headquarters of the Convention. Terms from \$2.50 to \$4.50 per diem. American plan.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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TOMB OF CARDINAL G. B. ZENO IN ST. MARK'S, VENICE, ITALY.
A. AND P. LOMBARDO, SCULPTORS.

MARBLE ALTAR IN THE GIUSTINIANI CHAPEL IN THE CHURCH OF S. FRANCESCO DELLA VIGNA, VENICE, ITALY.

FOR this and two preceding subjects see article on "Santa Maria dei Miracoli" elsewhere in this issue.

AN ÉCOLE DES BEAUX-ARTS PROBLEM: A READING-ROOM DOOR OF A PUBLIC LIBRARY. DESIGNED BY MR. LOUIS C. SPIERING, CHICAGO, ILL.

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THE ROYAL STABLES (MARSTALL-GEBAUDE), BERLIN, PRUSSIA.

[Gelatine Print.]

THE stables of the Royal Prussian Family, which are now being thoroughly remodelled and reconstructed, as recently described in these columns (see *American Architect* No. 1224, of June 10, 1899, page 88), cover a very considerable area of ground opposite the "Old Palace." They comprise a number of buildings which, one by one, have passed into the possession of the Hohenzollern Family. The façade shown in our plate represents the middle resault of that portion of the stables which fronts on Breitestrasse, and was built by Michael Matthias Smids, of Holland, court-architect to the Great Elector, between 1666 and 1674, to replace the old stable-buildings destroyed by a conflagration in 1665. The chief ornament of this façade is the large sculptured pediment, containing, on both sides of a circular window, groups of horse-tamers with horses and dogs, the whole in crude and rather clumsy forms, which, however, seem to have stood in better harmony with the original architectural forms of the façade than they do now, alongside of the characterless and trivial forms of the renovation of not long ago, which covered all the windows of the upper stories, leaving only the old sandstone portal and the latticed square openings of the ground-floor in their original appearance.

BANK OF ENGLAND: LIVERPOOL BRANCH, LIVERPOOL, ENG. C.
R. COCKERELL, ARCHITECT.

BANK OF ENGLAND: LAW COURTS BRANCH, LONDON, ENG. SIR
ARTHUR BLOMFIELD, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

AN AWARD CRITICIZED.

NEW YORK, N. Y., November 3, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I have received the report of a college professor on a competition which enlisted forty-four architects (or speculators). His report is so notable in the following claims, I thought I must write you his words with a few comments:—

"I took the plans of the first, second and third story from each of the forty-four sets and re-examined them carefully with reference to (a) the general scheme or disposition of the chief elements of the building; (b) the convenience and fixtures of the reception-room or rotunda and surrounding offices; and (c) the evidences of architectural ability and skill shown by the handling of the details of the planning. Every design that held out any prospect of superiority in any respect was laid aside for future consideration, all others were returned to their portfolios as not possessing sufficient merit to warrant further examination. . . . As a result, eleven designs worthy of second examination."

I wish these words could become a guiding text for any and all competitions. On this wretched affair eight drawings—all large and elaborate—were exacted from each competitor. I do not blame the professor. He says, elsewhere, that he did not neglect the five other drawings. The point is, five were substantially useless—three only of value. Why, then, should not competitions call for "the three," as generally stated for one or two leading drawings of a design—from which successful competitors should be chosen to further elaborate in a limited and paid competition. To what purpose is this waste. This competition cost the architects not less than four thousand dollars and wasted not less than three thousand dollars. "Gather up the fragments"; that is what I am trying to do in this letter to you, to arouse public sentiment for commonsense in this matter that is fast becoming a terrible curse to the architectural profession.

Let architects in important competitions give their ideas in an in-

expensive way (strictly confined and limited, but limited to very little work), and followed by a paid competition among the few selected ones, chosen on the leading ideas presented.

Respectfully yours, ARTHUR B. JENNINGS.

[We can perceive that in this competition, as in all others, there has been waste, but we cannot make out whether our correspondent feels that the expert should have taken some other course: comparing, say, the forty-four rear elevations with one another, while not disregarding the other drawings.—EDS. AMERICAN ARCHITECT.]

FROSTED SHOP-WINDOWS.

MADISON, WIS., November 4, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I enclose sketch-plan of store-front show-window and would like to have your opinion, through your journal, on the cause of and remedy for show-window glass "sweating" in cold weather. The building was erected last summer and is heated by direct steam, the exposure is south, the show-window is enclosed at back from floor to ceiling and no air except such as may come in through cracks around doors or in woodwork is admitted to, or taken from, it. There is one steam-pipe, about two inches in diameter, in the corner of each window. Trusting I will hear from you at an early date, I am very truly yours,
SUBSCRIBER.

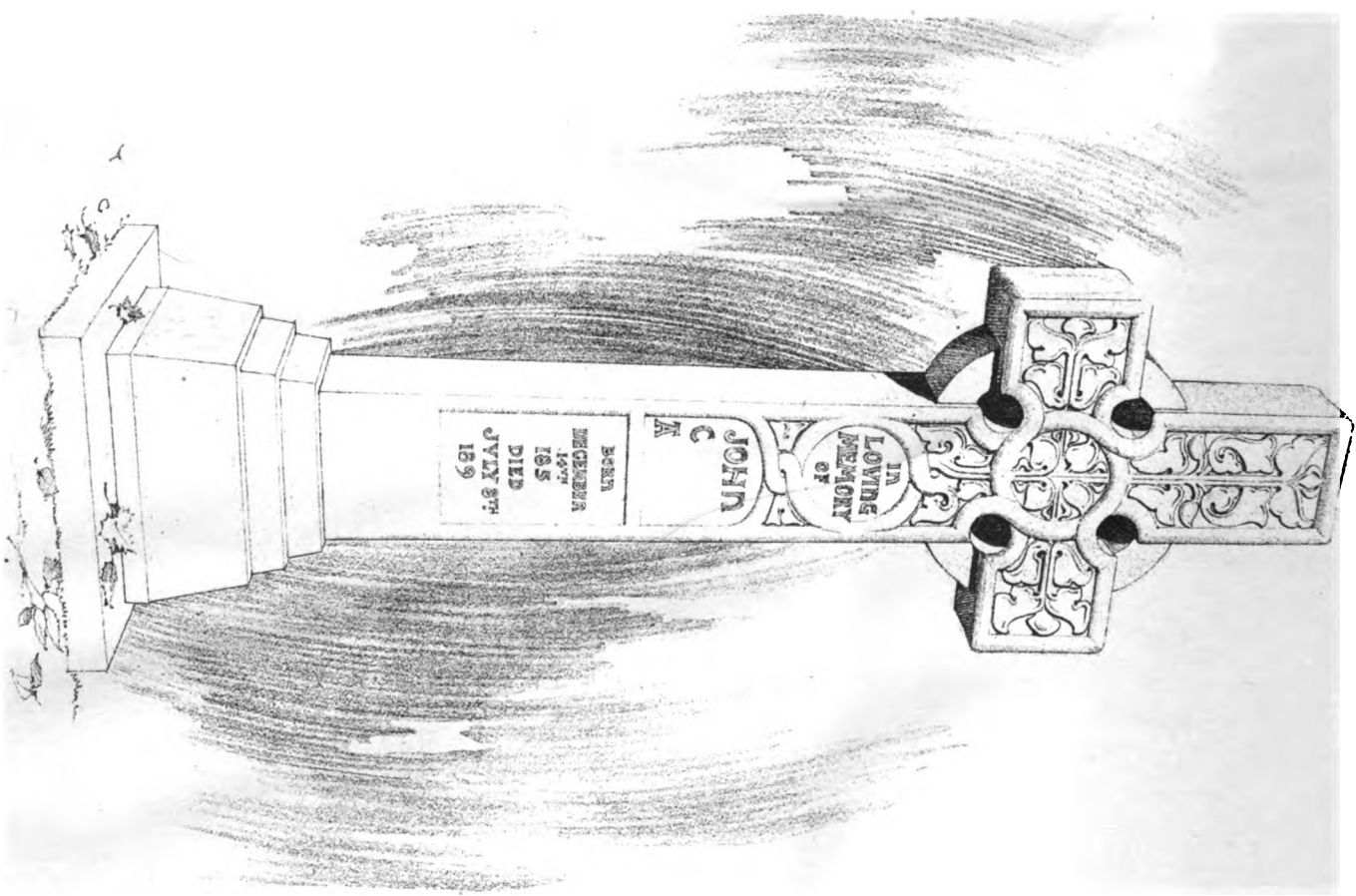
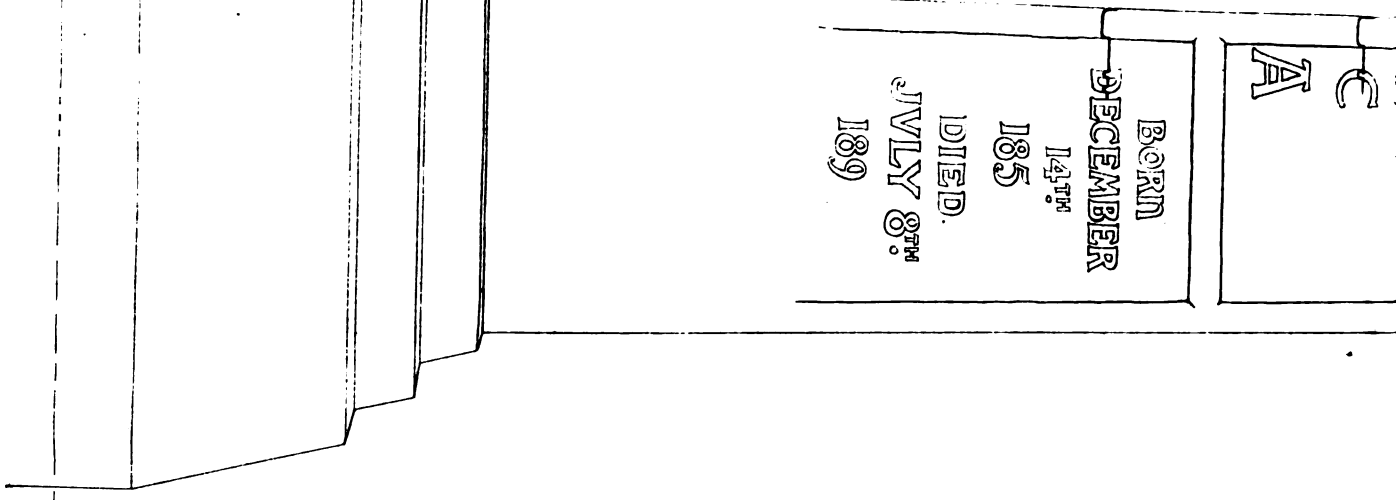
[The air next the window may take moisture from the goods displayed in it, or even through the woodwork at the back, as wood will transmit moisture to a certain extent, particularly if it is not well-varnished or painted. The air in contact with glass must be extremely dry not to show condensation in very cold weather. As a remedy for the trouble, we would suggest rubbing glycerine over the inner surface of the glass, and then wiping it off. If the enclosure behind the windows is made as tight as possible, a saucer of chloride of calcium placed in a corner will absorb the moisture from the air, and keep the space dry, unless additional moisture is supplied by the goods. It is not impossible that a joint of the steam-pipe, or a fitting, may leak slightly, and if this is the case the trouble would be accounted for. To test them, brush the joints and fittings over with strong soap-suds, adding to the soap and water a little glycerine for greater certainty, when steam is on. A bubble will show a leak.—EDS. AMERICAN ARCHITECT.]



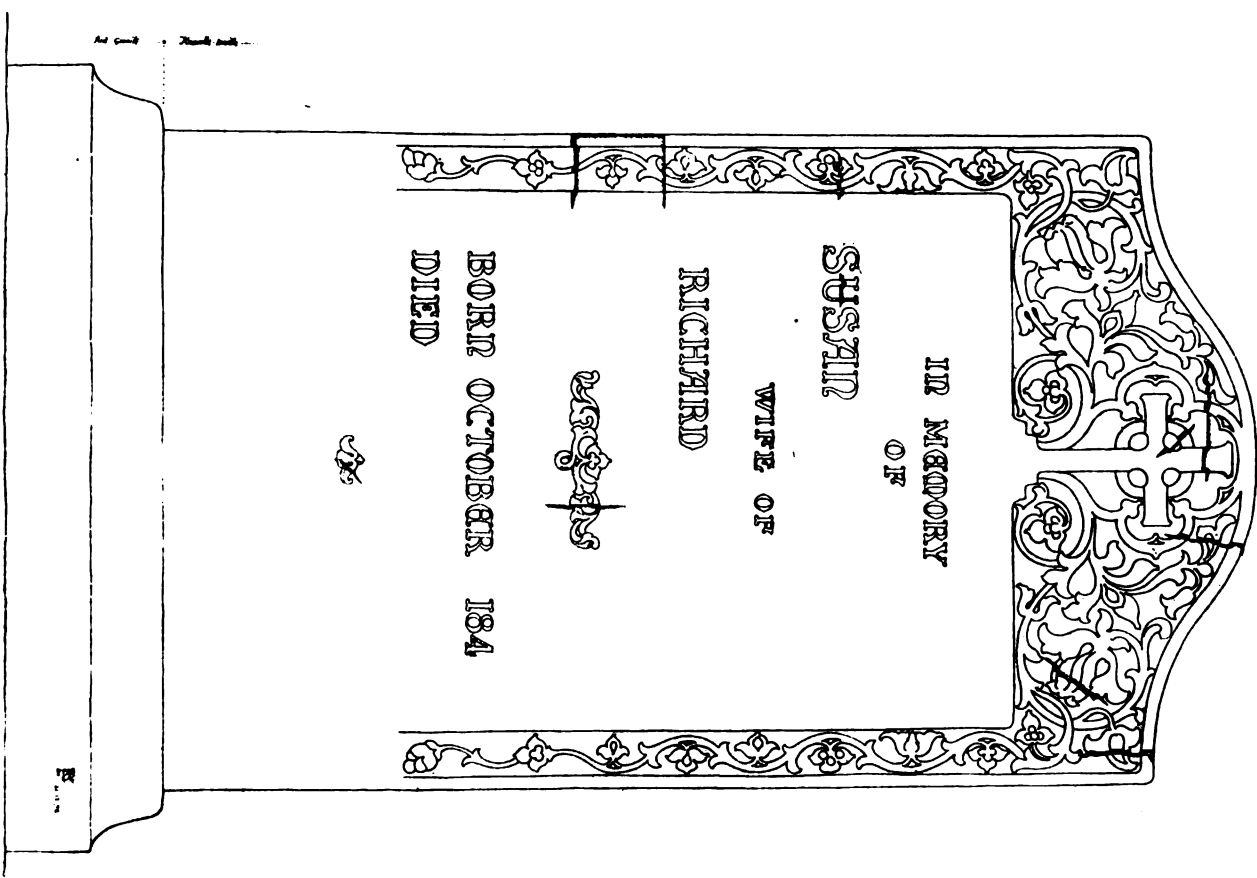
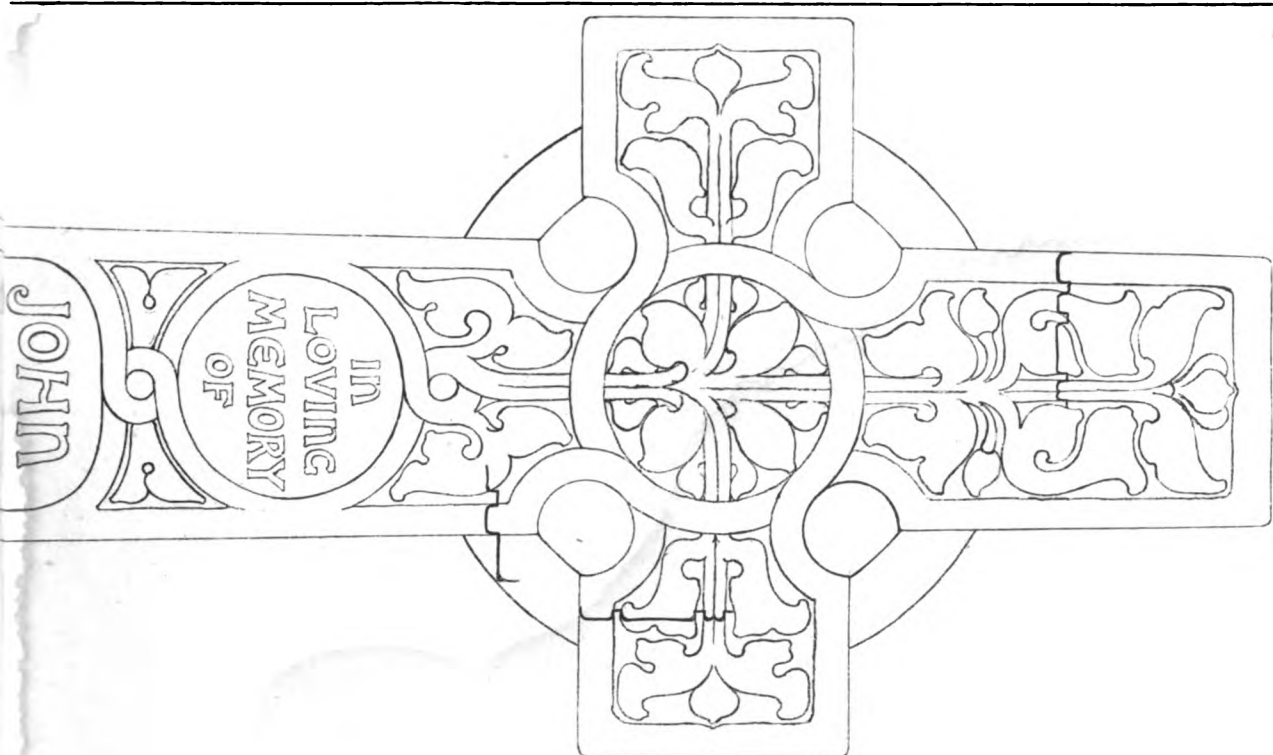
AN UNUSED LONDON TUNNEL.—A tunnel built forty-two years ago between the London General Post-office and Euston Station for the pneumatic transmission of mail, and on account of its complete failure almost forgotten, has been examined recently and found to be in good order. The opening is 4 feet high by 4 1-2 wide, and it is now proposed to use it for the transportation of mail by means of a miniature electric railway.—*Exchange*.

THE FAILING INDIANA GAS-SUPPLY.—Denials that the natural gas-supply in Indiana is failing do not avail against the recent action of the Consumers' Gas Trust Company in Indianapolis and the Indianapolis Gas Company. In concert of action, these companies cut off the supply of natural gas on the first of October from the factories, large and small, the hotels, the office-buildings, and the apartment-houses in the city. Every building having a steam-heating plant was cut off, the idea being that such places could change from gas to coal with less inconvenience than could the small consumers. Only ordinary domestic consumers in the city will be supplied hereafter, and unless an unexpected supply of gas should be developed the day of natural gas for power purposes in Indianapolis has passed. There will be a marked insufficiency of supply, although each gas-company has just laid a new ten-inch main into the city.—*N. Y. Evening Post*.

THE TEMPLE OF KARNAK.—I have just received a detailed account of the fall of the columns in the great hall of Karnak, about which a telegram has been published in the *Times*. The catastrophe occurred at 9 A. M. on October 9, and is supposed to have been due to a slight shock of earthquake. Eleven columns in all have fallen in the fourth and fifth rows north of the axis of the temple and between this and the wall of Seti I. They are thus in a line with the leaning column which was restored last winter by M. Legrain. They all fell in a straight line from east to west, the result being that the westernmost is still partly propped up against the pylon of the temple. The ruin is terrible, and if the hypostyle is to be saved it must be done at once before further mischief takes place. The columns can be set up again, but the architraves above them are utterly broken and destroyed. M. Legrain, who has been engaged for the last three years in repairing and strengthening the ruins of Karnak, started for Upper Egypt immediately on hearing of the disaster. He found that the columns he had already repaired were uninjured by the fall of their companions; even the famous "leaning column," which he spent last winter in reërecting, though terribly battered by the huge stones which fell against it, successfully resisted the shock. It is very unfortunate that the funds at M. Legrain's disposal have not been sufficient to allow him to do more than strengthen and restore the columns whose condition seemed the most critical; those that have fallen did not appear to be in immediate danger, and consequently work upon them was deferred to another year. What has happened has shown that the whole building is in such a critical state that any delay is dangerous, and it is therefore to be hoped that the Egyptian Government may see its way towards increasing its grant for the restoration of the temple, and so enable the work of restoration to be fully carried out before a fresh disaster occurs.—*A. H. Sayce in London Times, October 17*.



TOMBSTONES DESIGNED BY ROBERT BROWN, JR., ARCHITECT.



SUMMARY
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THE AMERICAN ARCHITECT AND BUILDING NEWS.

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NOVEMBER 18, 1899.

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THE people of Boston have now a great opportunity, which they will soon lose, for making a fine residence-quarter around their new parks. The territory between Huntington Avenue and the river, lying on each side of the beautiful Fens, and forming the natural extension of the fashionable Back Bay quarter, is now practically vacant, and, if the simplest precautions were taken to encourage the building of dwellings of the best class, and to protect the owners and occupants of such dwellings from undesirable neighbors, it could easily be made fashionable. The Back Bay district owes its popularity to the circumstance that it has two natural boundaries, Boylston Street and the river, and that the land in it has been restricted against the worst class of tenements, and, for a term of years, against business; but it is now crowded, the houses in it are beginning to show the effects of age, and there is a demand for territory in which the rich people of the present day can settle, build larger and handsomer houses than have ever been built in Boston before, and live among others of similar tastes. The park, which will always have fine buildings around it, would naturally form the centre of the district, but it would be easy to extend the fashionable quarter, so as to include, with almost undiminished brilliancy, the whole territory between the great thoroughfare of Huntington Avenue and the river. The Parisians, who understand thoroughly municipal improvement, when they came into possession of the small Parc Monceau, practically quadrupled the extent of the desirable building land around it by the simple expedient of requiring owners of lots on the streets leading from the park to the main thoroughfares in its neighborhood to set their houses a little back from the street-line, and then placing handsome iron gates where these streets open into the great thoroughfares. The result of this arrangement is to make everything within the gates count as park, and the hôtel of the Prince de B., or the Duchesse de C., is always spoken of as being in the Parc Monceau, even though it may really front on the Avenue Van Dyck, or the Rue Rembrandt, and although its occupants may have no view of the park whatever except such as could be had by putting their heads out of a window, and looking up the street. In fact, some of the largest and finest houses in the Parc Monceau, as, for example, the Cernuschi house, now turned into a museum, are not on the park at all, but on the streets, in situations, which, except for this device, would probably be occupied by livery-stables, as similar situations are occupied in the neighborhood of the Boston Common and Public Garden.

THE actual frontage on the Boston Fens is very small, being only about seven thousand feet, or about the same as the water-side of Beacon Street, from Tremont Street to Massachusetts Avenue, and it is very important, as a matter of social economy, as well as of public advantage in increasing

the taxable value of property in the neighborhood, to diffuse over as large an area as possible the æsthetic and climatic benefits which centre in the open space of the park. This can be accomplished by encouraging, in some such way as has been done in Paris, the voluntary abandonment by owners of lots on streets throughout the district, of a certain space between the fronts of their houses and the sidewalk, to be devoted, at the expense of the owners, to ornamental shrubbery, air and light, compensating them by a guarantee, in the shape of suitable restrictions, that their neighbors shall do the same, and that they shall be protected from the intrusion of an objectionable element, in the same way that the owners of lots actually fronting on the Fens are already protected. If we are not mistaken, the Boston Park Commissioners have a certain jurisdiction over all territory within five hundred feet of the boundaries of the Fens, which might be utilized, and extended if necessary, to the very great advantage of the city. It is none too soon to use it, for building of the most objectionable kind is already under way close to the Park boundaries. For example, the rear windows of the houses already built on the Fenway, instead of looking into the rear windows of other handsome houses, occupied by well-mannered and sympathetic persons, enjoy a close view of strings of flapping underclothes, hanging from the back balconies of the cheap tenements on Hemenway Street; and it is said that more tenement-houses, of the meanest and cheapest class permitted by the Boston building-laws, are to be erected at once in the space between the Fenway and Huntington Avenue, within a stone's throw of what is intended to be the largest, and probably the most costly, private residence in Boston. It is, of course, understood that we have no objection to honest toil in general, or to the laundress's humble profession in particular; but this does not affect the fact that strings of miscellaneous clothing are not pleasant things to look at from one's dining-room or bedroom windows, and that the washerwoman's family and friends are quite likely to indulge in conversation which is not edifying to the children who may be playing in the back-yards of neighboring houses; while any real-estate man can testify to the ruinous effect of such intrusions upon the value of property for a long distance around.

THE last monthly meeting of the Architectural League of New York was enlivened by a discussion of the advisability of erecting a building which should display the resources of the united arts of New York, or, perhaps, of America in general, and should be utilized for an annual exhibition of fine-art, after the manner of the Paris Salon. A committee of five members was appointed to consider the subject of holding a united arts' exhibition, and to report at the next meeting, and it may be hoped that the movement thus begun will not be allowed to drop. So far as a new building is concerned, it seems to us that the Madison Square Garden would be quite large enough, and more conveniently situated than any new structure of that size would be likely to be, and the money which a new building would cost might be spent more advantageously in providing tempting prizes for the best works shown. In Paris, owing to the good judgment of the juries, and the way in which brilliancy is given to artistic awards, the future of the artist who can win a first-class medal is assured, so that the Salon really offers a fortune as a prize every year, at a trifling expense to itself. With us, it would probably be necessary to make the cash premiums more considerable, to make up for the undeveloped prestige that they would bring with them, but a fraction of the cost of a new building would provide prizes large enough to attract and stimulate the highest talent of the country.

ARCHITECTS who would like to try a new sensation in the way of foreign travel could not do better than to take a trip described by Herr Eduard Jacobsthal, in the *Deutsche Bauzeitung*. Since the Russians took possession of the mountain region of the Caucasus, the country has rapidly developed. Readers of Henri Gréville will remember the description of the watering-place of Piatigorsk — the "Five Mountains," and, since the time of the poor violinist and the beautiful princess, many rivals to Piatigorsk have sprung up. From the last railway-station diligence-roads lead over the mountains to Tiflis and Erivan, and at the latter place begins

the great highway to Persia, a road so crowded with European carriages, camels, horses, donkeys, foot-passengers of all descriptions, and the wooden-wheeled wagons in which the Kurdish herdsmen transport their families to and from their mountain pastures, that stringent police regulations are necessary to prevent blockades. On each side of the road are constructions of great interest to the architect, as well as to the archaeologist, who may see in them the original forms of many antique details. In the mountain regions it is common to see houses with walls of wicker-work, the roof, which is far too heavy to be supported by such a construction, resting on wooden posts, which stand free, at a little distance outside the walls, and form a peripteral colonnade, or simple porticoes, as the case may be. The wooden posts are sometimes plain, and sometimes carry a short cushion-piece between them and their lintels, after the manner of what is supposed to have been the primitive form of the Ionic capital. As the road descends into the plain of the Araxes, the basket-work walls disappear, and a sort of adobe construction takes their place, presenting, particularly in the manner of forming the openings with wooden frames, a new set of interesting suggestions. It is to be remembered that this road, although not so frequented as the great highway through Asia Minor to the Ionian seaports, was undoubtedly in use long before the Christian era, and the dwellings of the common people were probably built then just as they are now, in the same way that the patterns of the rugs woven in them at the present day are said to be the same as those in use before Xerxes led his army of a million men through that region to annihilate the upstart Greeks.

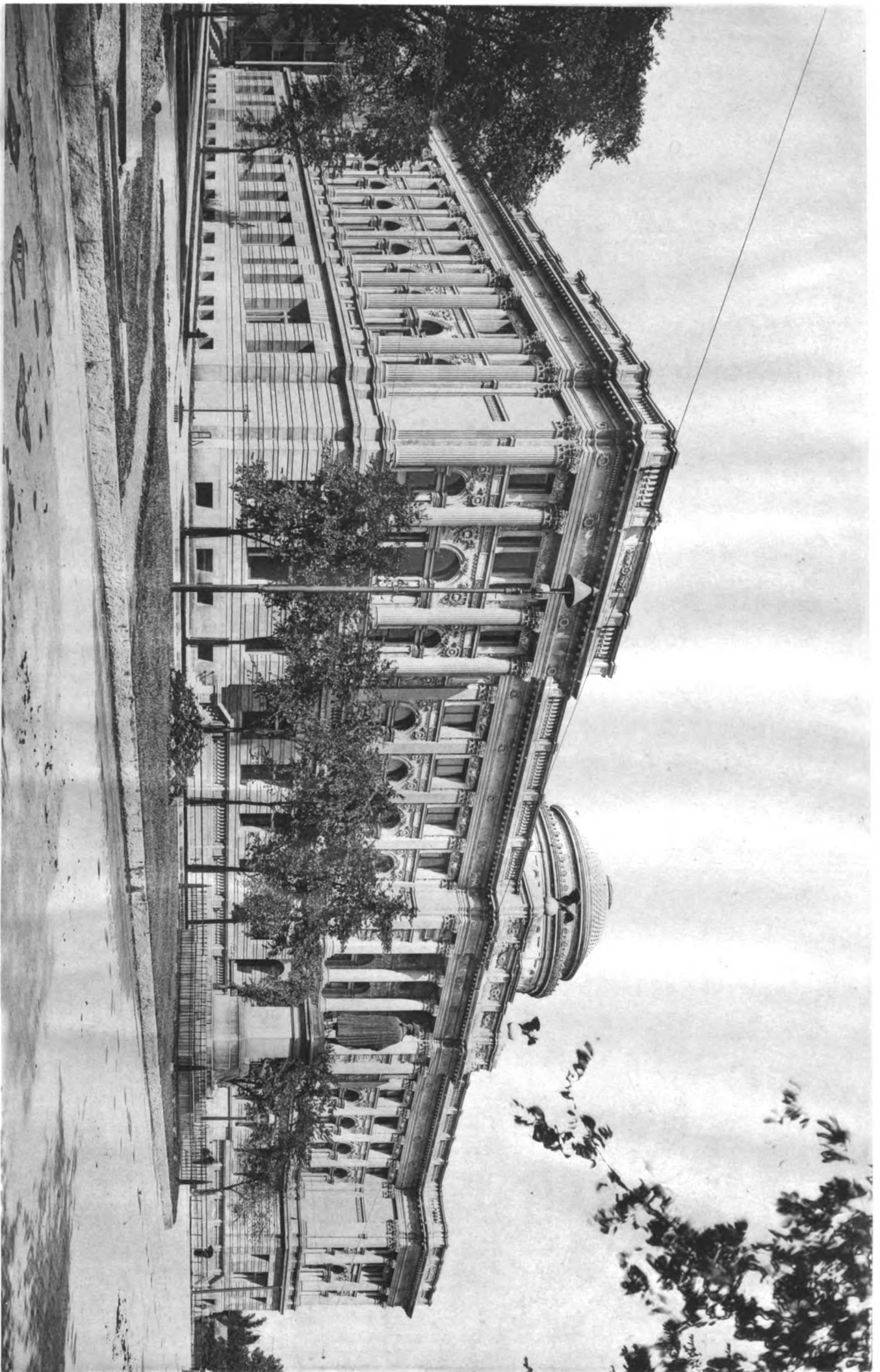
THE eastern slopes of the Caucasus, and the Araxes valley, show everywhere traces of the most remote antiquity.

Everywhere through the valley the snow-capped pyramid of Ararat is conspicuous. Even in Etschmiadzin, one of the mountain towns, Herr Jacobsthal was invited to an Armenian festival in a church which replaced, in the year 309, a temple of Artemis, and the altar of which still stands on the foundation of the statue of the goddess; and was shown, in the library of the cloister, manuscripts a thousand years old, looking almost as fresh as new parchment; but from this place he pushed on to one far more ancient, which was described by Strabo under the name of Araxat, and by Ptolemæus as Naxuana, and is still known as Nachtschewan. According to popular tradition, it was here that Noah settled when he left the ark, and his tomb is still shown in the town, that of his wife being also visible in the outskirts, on the road to Tauris. These constructions, the authenticity of which Herr Jacobsthal does not guarantee, are, apparently, the only remains of the antepatriarchal period, and the most important ruins date merely from the twelfth and thirteenth centuries of our era. These are, however, sufficiently interesting, being remarkable examples of brick and terra-cotta inlaid work, in excellent condition. An important part of the decoration consists of inscriptions in Cufic characters, which, like the Arabic, are easily adapted to ornamental purposes, made with small bricks, or prisms, set in the wall, with very slight projection. The color of these bricks is different from that of the body of the wall, and a very enduring, as well as beautiful, effect is produced in this way.

THE present method of disposing of garbage in New York, by carrying it out to sea in scows, and dumping the heavy portion, leaving the lighter part to float about until it is deposited on some neighboring beach, has long been recognized as unsatisfactory, and a cremating apparatus, which promises well, is to be tried. This apparatus consists of a series of ovens, heated by petroleum spray, in which it is hoped that the refuse can be incinerated without inconvenience to the neighborhood. A good feature about the proposed system is that the refuse can be delivered directly into the ovens, without the offensive picking over in the open air which has led to the abandonment of other systems of cremation, and ample room is given for removing ashes and bulky residues. Whether the demands of strict economy are fulfilled by burning, with expensive fuel, the grease and other valuable portions of the garbage, is a nice question, but it has been suggested that the ashes from household refuse contain a large amount of combined phosphoric acid, which is valuable as a fertilizer, or might possibly become important as a source of phosphorus, the manufacture of which from ordinary materials is said to have fallen under the control of a monopoly.

THE Art Institute of Chicago is fairly entitled to the credit of being one of the most vigorous institutions of the kind in the world, and the patience, foresight and enthusiasm with which its work is carried on must lead, before many years have gone by, to results of which the country will be proud. The statistics of the school maintained by the Institute have shown that there are a great many young people in Chicago who desire to study art of some kind; and the figures showing the number of visitors to the galleries, which we find in the last annual report, show that the people of the city take an interest in the fine-arts which amply accounts for the predilections of their children. Although the Chicago Art Institute has only three free days in the week, while the Metropolitan Museum, in New York, has five, the number of visitors to the former for the past year was five hundred and seventy-eight thousand, while the number of visitors to the Metropolitan Museum was only five hundred and eleven thousand, and this in spite of the fact that the New York museum is one of the principal attractions of a city of some three million inhabitants, which is visited every year by crowds of strangers from all parts of the world, and that it contains a great variety of collections, some of them unique, and all of them of remarkable interest and value, while the Chicago Institute, although it possesses already an excellent collection, is not old enough to have accumulated anything like the quantity of valuable material to be found in New York. The Boston Museum of Fine-Arts, which has a fine collection, and resembles the Chicago Institute in having three free days a week, and in having about the same population to draw from, had in 1898 two hundred and two thousand visitors, a number which, although only a little more than one-third of that reported in Chicago, was more than twice as great as the number of visitors to the Pennsylvania Academy of the Fine-Arts, in Philadelphia, which is free every day.

THE editor of the *Revue Industrielle* writes rather bitterly of the way in which some of the English and American journals, privately stimulated, we are inclined to believe, by the advertising agents of the English and American trans-Atlantic lines, wrote, after the terrible disaster to the French ship "*La Bourgogne*," of French ships and sailors, to say nothing of French people in general, and retorts by calling attention to the robbery of the passengers by the crew of the wrecked English steamship "*Scotsman*," as evidence that, as it says, there are bad people everywhere as well as good people, and it is better to give due honor to those of any nation who, like the officers of "*La Bourgogne*," do their duty bravely in the face of death, than to hold a whole people responsible for the acts of a few scoundrels. We sympathize sincerely with this view, and, if we were ever to be in danger, would ask for no better protectors than the brave and loyal French; but the fact that ocean travel, by steamers of any nation, is attended with a certain risk of robbery and even murder, at the hands of the ship's company, if circumstances should cause a relaxation of discipline, is one that deserves anxious consideration. We have always thought that the influence of socialist and anarchist demagogues, who are permitted, and even, in some misgoverned cities, encouraged, to talk about the murder and robbery of innocent people by others who have received from them nothing but benefits, had much to do with the brutal cruelty and heartlessness which are so prevalent among the ignorant; but, however this may be, it is certain that the class from which are drawn the stokers and inferior hands on steamships has lost much of the honest faithfulness which once characterized it, and the officers of such vessels live in justifiable fear of the consequences of an outbreak of the lowest part of the crew. As an average first-class passenger-steamer carries about two hundred stokers, it is evident that a revolt among them may have serious consequences, and their work is so hard that humanity would urge its alleviation by the concession of a degree of liberty which might, with such men, be dangerous. It has been proposed a thousand times, probably, to substitute mechanical stoking for the labor of men, as is successfully done with many great power-plants on land; but it seems that the conditions on board ship are so different that no device for automatic stoking has been successful at sea. It cannot be that the difficulties in the way of modifying automatic stokers for marine use are altogether insuperable, and the substitution of the patient, steady labor of machinery for that of degraded men, perhaps half-crazed by the heat of the fire-rooms, would bring relief to the well-grounded fears of many a passenger.



THE PUBLIC LIBRARY, MILWAUKEE, WIS.
FERRY & CLAS, ARCHITECTS.

Heliotype Printing Co.

SANTA MARIA DEI MIRACOLI AND THE LOMBARDI.¹ — X.

The Clock-tower, Venice.

WE may leave Tullio his meed of fame in attributing largely to his chisel the exquisite freshness, the charming invention and marvellous finish of those decorative parts of their joint work, in which, indeed, Gauricus emphasizes his greatest excellence.

Müntz considers Tullio the least richly endowed of the three, citing the "Angels" at San Martino, the "Crowning" at S. Giovanni Crisostomo, the Pietà of S. Lio and the reliefs at Padua — but these were all done in his decline; he accredits Tullio with collaborating the Virtues of the Vendramin tomb. It was, after all, the collaborated works of father and sons which gave them their greatest renown, and one can admire the generous pride of the father in the skill of his sons which leaves these greatest achievements of the Lombardi *atelier* without his name.

In the remarkable reliefs of the Giustiniani Chapel at San Francesco della Vigna, we must recognize the hand of a refined and finished artist, and a grace and nobility of conception far removed, by the way, from the character of the Padovan reliefs. And yet here are striking analogies to the Lombardi manner. In point of date, it would seem that Tullio alone could have done them. They are assigned to 1530 or 1532, and Tullio's death is even by some authorities pushed on to 1539.

Perkins cites the record of San Stefano — 1530 — but does not assert that he has seen the entry. As to the Giustiniani sculptures, he frankly disavows his belief in the capacity of the Lombardi to have done this work, and, putting the date of the chapel decoration at 1532, he notes that Tullio was dead, Antonio not capable, and Santi merely an architect. Antonio's record ends in 1516, so far as I know.

Burckhardt comments upon these decorations as follows: "They are, perhaps, if not in artistic merit, at least in their integrity, one of the principal works of the school of the Lombardi. The altar, with the predella and the front, as well as the scenes in relief from the life of Jesus Christ, are of an elegant workmanship. . . . The marble panelling and the figure-decoration of this chapel bear a rather close relationship to the marble railing of San Stefano (1475) by the medallist Vittore Gambello, called Camelio, who is also the artist of the marble railings at the Frari, on the east side of the church. In this church, also (the Frari), the figures of the Prophets in relief — and still mixed with Gothic ornament — are by Andrea Vicentino, 1475."

The Giustiniani sculptures have certainly the spirit of an earlier time than the second quarter of the sixteenth century, and the altar and the reliefs of the interesting frieze are replete with the Quattrocentist feeling, perhaps with that of certain things at San Giobbe.

The records throw little light upon the matter. Burckhardt credits the admirable half-figures of the "Four Evangelists" to Tullio, without, I think, citing authority. If we accept this assignment, we must at least admit that Tullio's work of different periods presents almost irreconcilable inequalities. In studying the Lombardi it is difficult to avoid falling into the common error which ascribes to their *atelier* the greater part of all the work done in Venice during the period of their activity.

For about sixty years, from 1470 up to the death of Tullio, their name was the first in the arts of architecture and sculpture. In the domain of sculpture no Venetian artist, if we except, perhaps, Rizzo and Leopardi, approached their eminence during that time. In their own field they brought the art of the Early Renaissance to fullest flower.

Pietro remained the acknowledged head of the school until his death. Their fame as architects, sculptors and sculptural decorators rests chiefly upon the works which we have been considering. The vast amount of work attributed to the *atelier* of Pietro and his sons, or to his father and reputed brothers, sometimes perhaps upon insufficient evidence, may be recapitulated in brief as follows: —

Ecclesiastical.

The Church of San Zaccaria, Venice.

" Portal, Moro Chapel, etc., San Giobbe, Venice.

" Church of Santa Maria dei Miracoli, Venice.

" " " " Mater Domini, Venice.

" " " " San Giovanni Crisostomo, Venice.

" " " " Salvatore (interior Tullio), Venice.

" " " " Santa Maria Formosa (remodelling), Venice.

" " " " San Michele (Moro), Venice.

" " " " S. Giorgio dei Greci (collab. Santi), Venice.

" " " " San Andrea, Island of Certosa.

" " " " S. Cristoforo, at Murano (demolished).

Giustiniani Chapel, San Francesco della Vigna, Venice.

Jacopo Altar, San Marco, Venice.

Altar, San Giovanni Crisostomo, Venice.

Font, San Martino, Venice.

Altar, San Trovaso, Venice.

Restoration of Cathedral, Treviso.

Cappella Grande, Treviso.

Altar in San Niccolò, Treviso.

Cathedral, Friuli.

Monuments.

To Dante at Ravenna.

Doge Cristoforo, Venice.

" Giovanni Mocenigo.

" Pietro Mocenigo.

" Niccolò Marcello.

" Jacopo Marcello.

Doge Andrea Vendramin (with Leopardi).

Cardinal Zeno (with Leopardi).

Bishop Zanetti, Treviso.

Senator Onigo, Treviso.

Statues, Relievs, etc.

SS. Jerome, Stephen and Paul, at San Stefano.

" Cecilia and Caterina, Seminario Patriarcale.

Redeemer, — Vestibule of Accademia.

Doge Tron (on Rizzo's monument to the Doge).

Adam and Eve (from Vendramin Tomb).

St. Thomas (Tomb of Bonzio), SS. Giovanni e Paolo.

S. Jerome, at San Salvatore.

Pietà, at San Lio.

" " Santa Maria della Salute.

Giustiniani Chapel, San Francesco della Vigna (?).

Reliefs in "del Santo" at Padua.

The Warriors, Pal. dell' Ambasciatori, etc.

Public.

Scuola San Marco.

Procuratie Vecchie.

Court of Ducal Palace.

Clock Tower.

Screen, S. Giovanni Evangelista.

Staircase, S. Giovanni Evangelista.

Fireplaces, Ducal Palace.

Sopraporta, Ducal Palace.

Plans of Scuola San Rocco.

Collab., " " " "

Fortifications of Treviso (?).

Domestic.

Palazzo Dario (front).

" Vendramin Calerghi.

" Corner Spinelli.

" Trevisan.

" Malipiero.

Palazzo Manzoni.

" by Bridge of San Antonio.

" Pola, Treviso.

" Bettignuolo, Treviso.

Outside Circular Stair (brick and stone) in Cortese del Maltese — (forerunner of the famous stair at Blois).

There is more or less meagre ground for assigning some of the above works to the Lombardi, but there is every likelihood that most of them were begun and finished by them or under their influence. In regard to some, all authorities are in accord. Others are open to much doubt. There was probably much outside collaboration which appears only vaguely in the records.

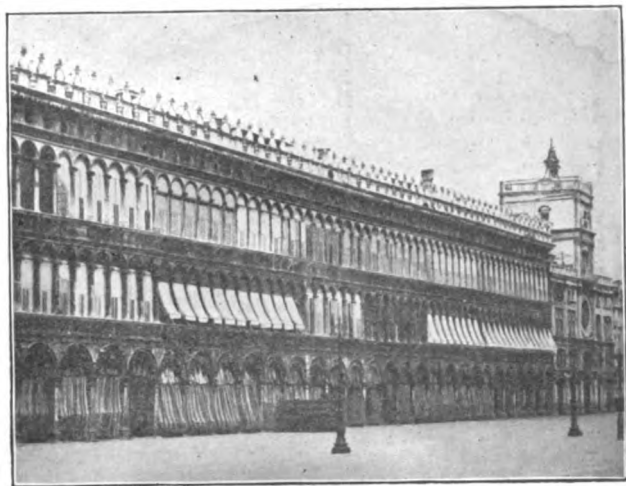
The date of Pietro's death is not quite clear, but it was probably not later than 1515. He died full of honors, the Prothomastro of Works at the Ducal Palace, and Chief of the Scalpellini, the united societies of architects, sculptors and stone-workers of Venice.

His son Antonio outlived him only a short time, and is supposed to have died in Ferrara, where he was in the pay of the duke until the year 1516. Tullio lived on to at least 1530, and perhaps to 1539. L. Seguso, in his *opusculus* on the Lombardi, calls Moro the brother of Pietro: "*Maestro Moro era fratello del Caronese Pietro Lombardo.*" Paoletti rejects this and maintains that Moro was not of the family.

This writer mentions one Maestro Giovanni Bura, a sculptor, of Osteno, who did some fine work at San Zaccaria in 1470, and hints that he may have had a hand in more than one of the Lombardi *chefs-d'œuvre*, although "most patient researches" failed to discover anything definite. As to that, there were doubtless several younger men of talent in the Lombardi *atelier* whose names are lost in the greater renown of their chief. There is, unfortunately, much uncertainty about the whole matter which is only likely to be cleared

¹ Continued from No. 1246, page 44.

up by the discovery of documents whose existence is not now known. In the little book by Pietro Brandalese, "*Pittura, Sculture, Architetture, etc., di Padova, 1795*," there is an allusion to two lost documents which might have thrown light on these matters. One was an anonymous manuscript of 1530-45, in the library of St. Mark's, known as the "MS., Animo Zeno." It contained a notice of the



The Procuratie Vecchie, Venice.

painters and sculptors of certain Italian cities, which the author had transcribed from writings of Girolamo Campagna and from oral statements of Andrea Riccio. The other, less important, was by an anonymous writer of the end of the seventeenth century.

The latest works of Pietro Lombardo, the Procuratie Vecchie, the Clock Tower, the Court of the Ducal Palace, evidence a style brought to its ultimate conclusions. One hesitates to set aside the claims of Bergamasco, architect of the Camerlenghi Palace in 1525, to the authorship of the so-called "Little Façade of the Ducal Palace," which Burekhardt maintained, while Selvatico urges that Pietro did it between the years 1499 and 1511. Here again the records are obscure, but the balance of probability is with Pietro as Prothomastro. Again, if we attribute to Pietro the authorship of the plans for the Scuola San Rocco, accredited by Selvatico to Scarpagnino, and by other authorities to Bartolomeo Buon, we must hail him as the founder of yet another new and distinctive style. One may sum up by saying that the Early Renaissance of Venice, beginning and ending with the Lombardi, reached a development free from the aridity of contemporaneous work elsewhere, and, especially in the field of sculptured ornament, full of the charms of grace and originality. Their best productions were the result of collective effort under the leadership of the master, Pietro, and ultimately combined the arts of architecture and sculpture in a high degree of integrity.

There is some uncertainty as to their authorship in one or two cases, but withal the laurels of the Lombardi are weighty enough to bear the loss of a leaf or two here and there, and, when all is said, even the diatribes of purest criticism against "incrustation" and "joiner architecture" leave to Pietro Lombardo and his sons the glory of having created buildings and monuments among the noblest which Venice possesses.

A. B. BIBB.

THE ARTS AND CRAFTS AT THE NEW GALLERY.



From Chambord.

besides several cases of beaten silver-work and jewellery. On the walls are hung specimens of fabrics in wool and silk and designs for such, as well as for embroideries, tapestries and wall-papers.

The committee cannot be complimented on the arrangement, which leaves much to be desired, and reminds us of someone's advice in "Punch" as to arranging Japanese fans—"Don't arrange them; let them occur." Another defect is the absence of an Index of Exhibitors.

A gloom was cast over the opening of the last exhibition by the

announcement of the death of the President of the Society, William Morris, as visitors were crowding to the private view on October 3, 1896. Very properly, therefore, the south gallery has been devoted to a representative collection of the products of the hand and brain of "the great designer and craftsman, poet and social reformer, who has been so potent an influence in the movement of revival in the handicrafts which has characterized the later years of our century," to quote Walter Crane's note prefixed to the catalogue. Space having been thus curtailed, exhibits have been received only from persons residing in the United Kingdom. This, notwithstanding the north gallery, is, as heretofore, overcrowded with furniture, and bears more resemblance to an upholsterer's show-room than to a gallery thrown open to the criticism of the public. We might have added, "to its admiration," had the design and workmanship exemplified the principle so strongly enforced by William Morris: "*Have nothing in your houses that you do not know to be useful or believe to be beautiful*," whereas much of said furniture is both unpleasing and uncomfortable, and recalls only too vividly his words on another occasion: "The wretched thing is so ugly, and silly, and useless, that I ask you to cast it from you." In fact, some of the furniture is quite unsuitable to a house of the slightest pretensions to ordinary comfort and dignity; an instance of which is to be remarked in Heal and Sons' "Oak Bureau," ugly and cumbersome, and rough enough for a Saxon farmer's living-room in primitive times. Among the exceptions mention should be made of the furniture designed by Mr. C. F. A. Voysey. Unquestionably an artist of remarkable individual gifts, his work is sure to attract attention by its adherence to architectural canons and by its dominant restraint and refinement. Very charming is the "Oak Cabinet" designed by him for his great patron, Mr. Ward Higgs, expressly to contain a sumptuously-bound volume of the famous Kelmscott Edition of "*Chaucer*." The fittings are of brass, four long ornamental hinges, between which are fixed the two quaintly-shaped plates, on which are deeply engraved, in no less quaintly-formed letters, picked out with red, the words, "Kelmscott Chaucer." The beautiful volume rests open within, and a charming tone of color is imparted to the vellum pages by the vermilion-enamelled interior. This cabinet stands on a table made in an equally rigid style, and the entire workmanship is excellent.

An "Oak Writing Cabinet," exhibited by the Guild of Handicraft, is somewhat indifferently designed by Mr. C. R. Ashbee, but is charmingly decorated with inlays of tulips and beautiful metal handles.

Mr. Merwyn Macartney's "Cabinet," in teak, deserves praise for its good joinery and its tasteful draw-handles of ivory with pearl centres.

Mr. W. A. S. Benson exhibits an attractive "Rosewood Cabinet," with polygonal front and "old silver" mounts.

There are also several chairs in unpolished oak and ash, and called *easy*. Mr. Dolmetsch sends a "Grand Piano," designed and executed by himself, with paintings by Selwyn Image. The keys have been reversed in color, as was customary 150 years ago—a needless and confusing archaism.

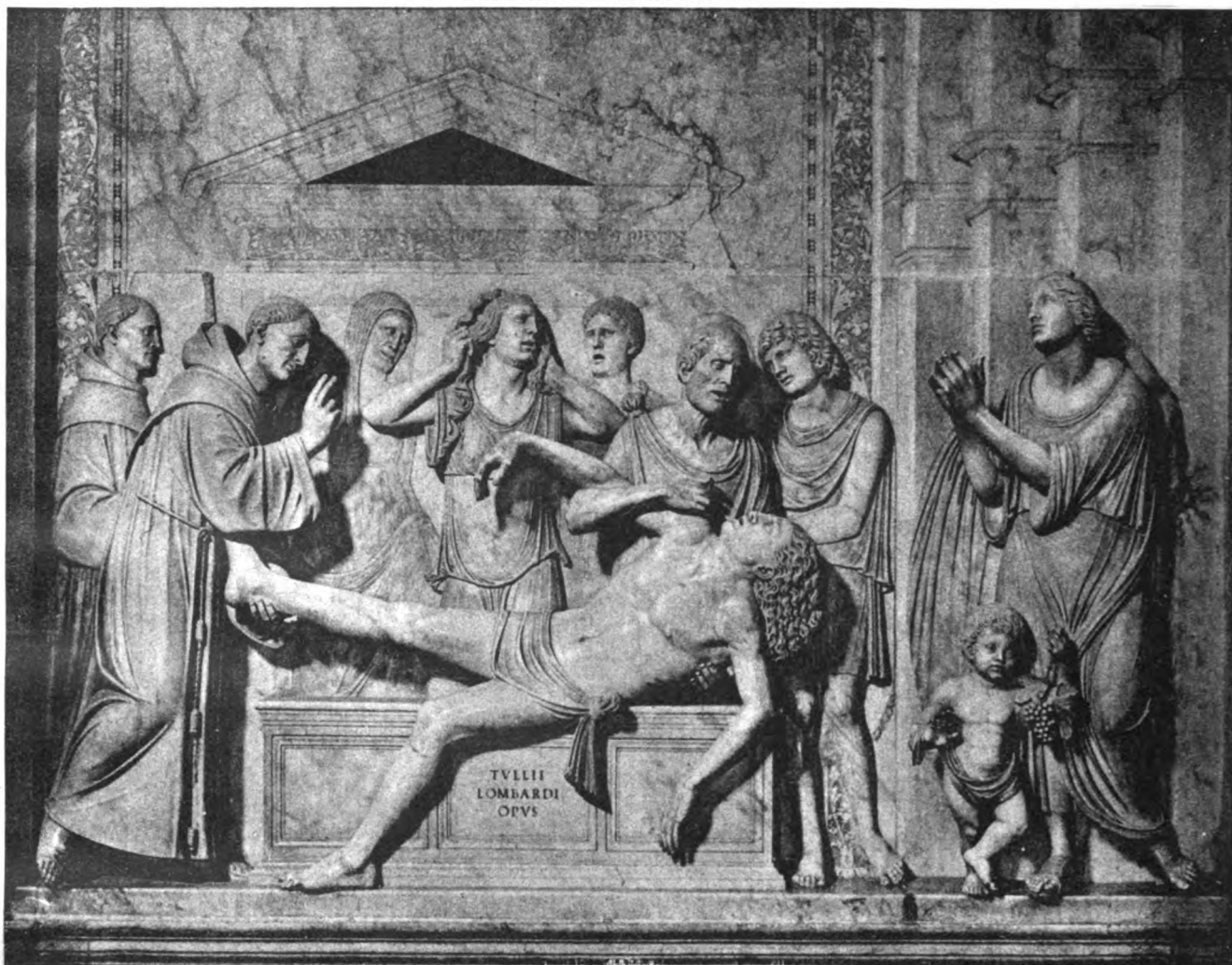
Among examples of ironwork are numerous fire-grates, a fine one by Mr. Benson, a small bedroom one by Mr. Voysey, and an exceedingly good and roomy fireplace, the sides filled with Dutch tiles, by Mr. G. Jack; all manufactured by the Falkirk Iron Co. Mr. Nelson Dawson sends an elaborate "Fire-grate in Forged Iron and Brass and Brass Fender." For the *motif*, the legend of St. Osmund was taken, suggested by seeing in Kew Gardens the beauty of the opening fronds of the *Osmunda regalis*, which is woven into the design, the upright portions of which are surmounted by fantastic crowns, in accordance with the attribute *regalis*. Every part was first carefully modelled in wax. Messrs. Wilson show a large and handsome "Screen" in wrought-iron, which is excellent, both in workmanship and design. It is to be placed in Holy Trinity Church, Chelsea. Mr. Percy Macquoid must be commended for his capital "Corona" of polished iron, a happy combination of the Runic and Mediæval: it was manufactured by Starkie, Gardner & Co.

Passing by a number of the usual copper lamps, scuttlés, bowls, etc., we pause at Mr. Clement Heaton's "Vase in Repoussé Copper Enamelled," which is about three feet high. The shape is good and the ornamentation in *cloisonné* of a more or less Chinese character, manufactured by Longden & Co.; and designed by Mr. Wilson, are seven plates, called roundels, in beaten copper, representing "The Days of Creation," which are only fairly good. Several sets of door-furniture made by Elsley & Co. are exhibited among others by Mr. Voysey and by that clever young architect, Mr. Quennell, who also sends a pair of "Brass Altar Candlesticks" and a "Chimney-piece." Mr. Voysey's "Finial for a Newel-post" is a charming bit of work; it is a small seated figure, in bronze, of a boy tracing the words of a book over which he bends.

Among the plaster-casts are a particularly good set of "Medallions and Medals," by Miss Margaret Giles, Mr. Jack's panel, "Ploughing," and Mr. Frampton's design for a "Memorial," executed in bronze and stone, which represents two angels leaning on their swords at the entrance to a tomb. The same idea characterizes the monument to Lord Melbourne in St. Paul's Cathedral, and is perhaps more dignified.

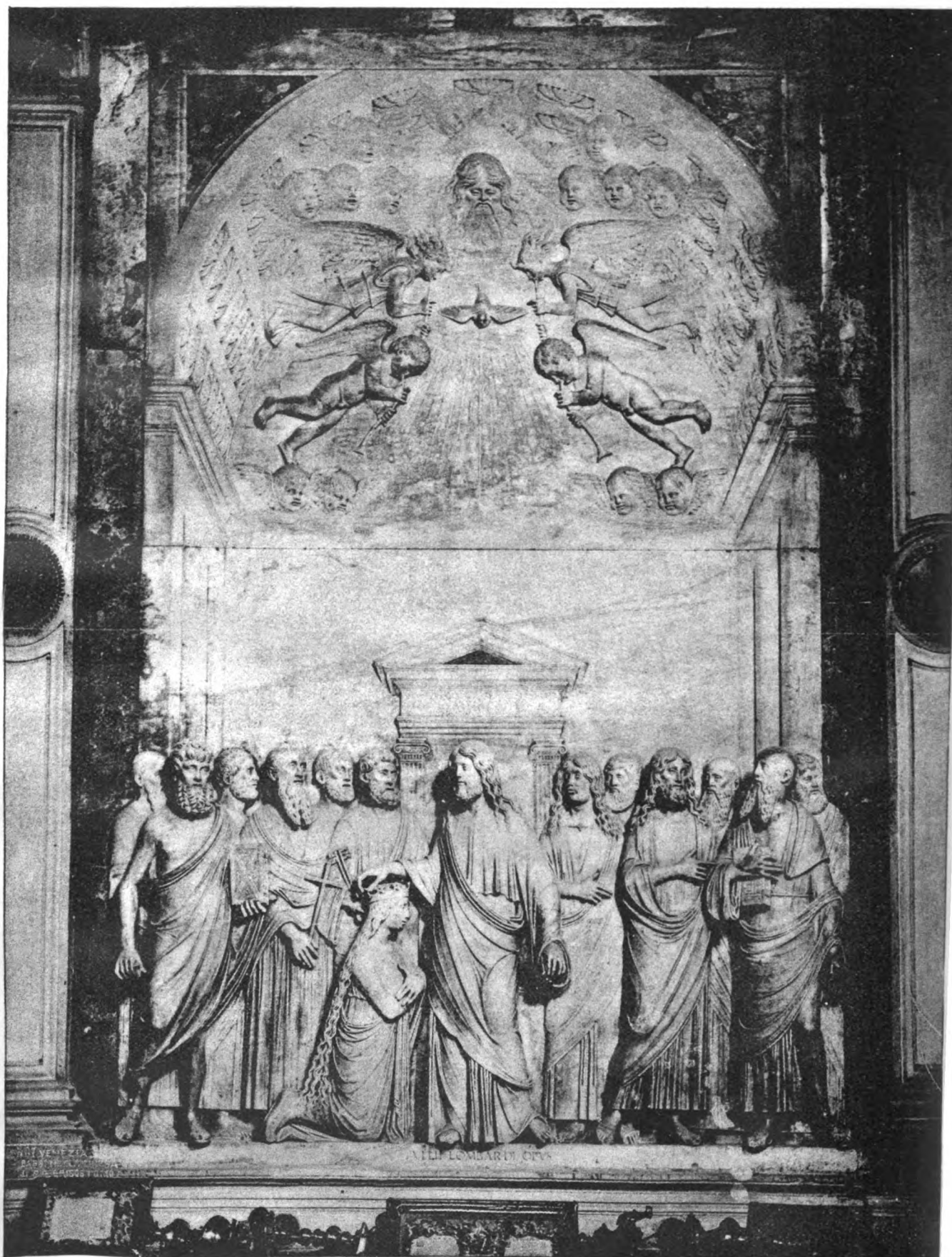
For the first time there are none of the exquisite embroideries from the Guild at Leek, which may be the reason the needlework is less decorative, though in good style. We may note a "Fire-screen."

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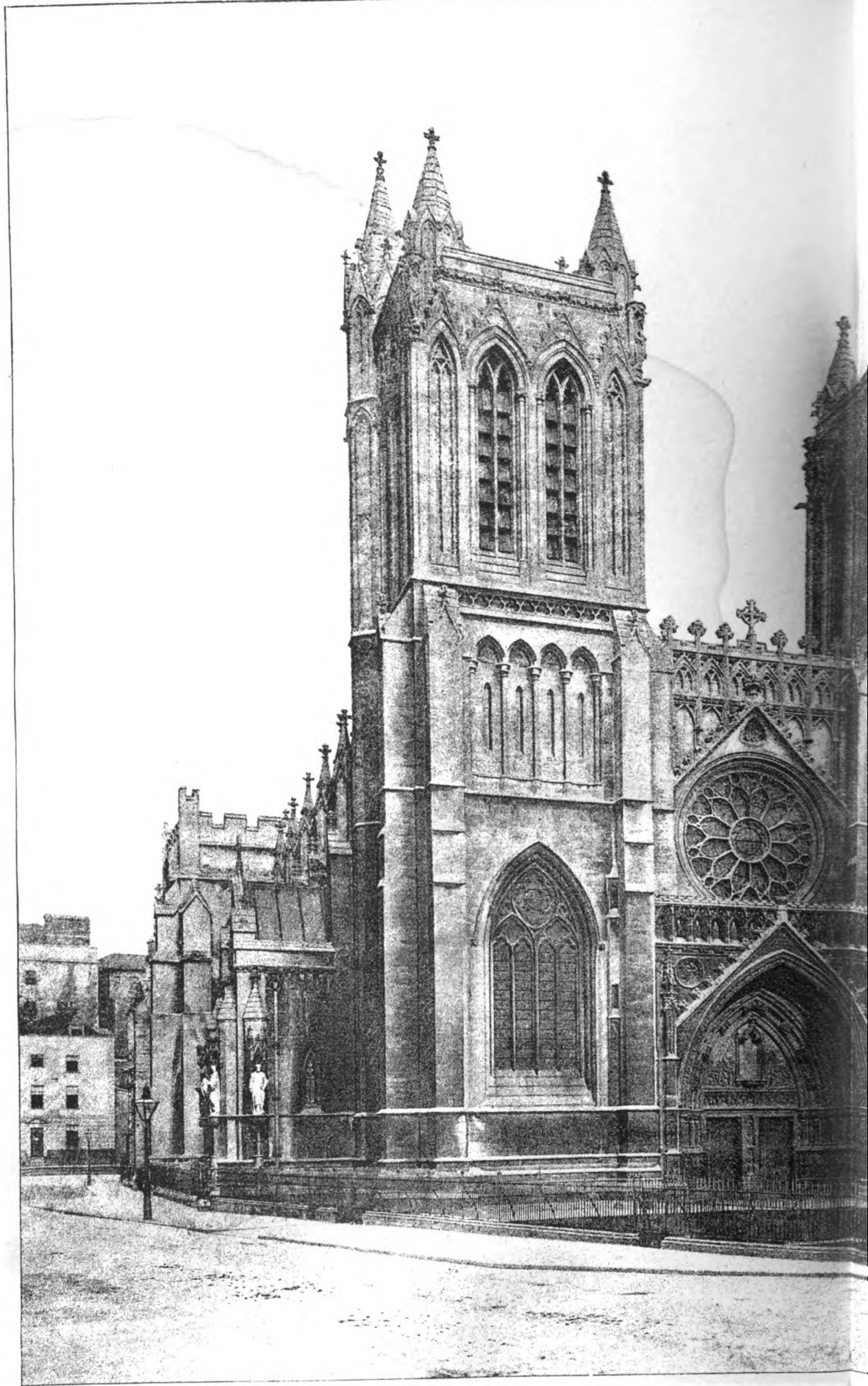
BAS RELIEFS IN THE BASILICA OF S. ANTONIO, PADUA, ITALY.
TULLIO LOMBARDO, SCULPTOR.

HALF-TONE PRINTING CO., BOSTON

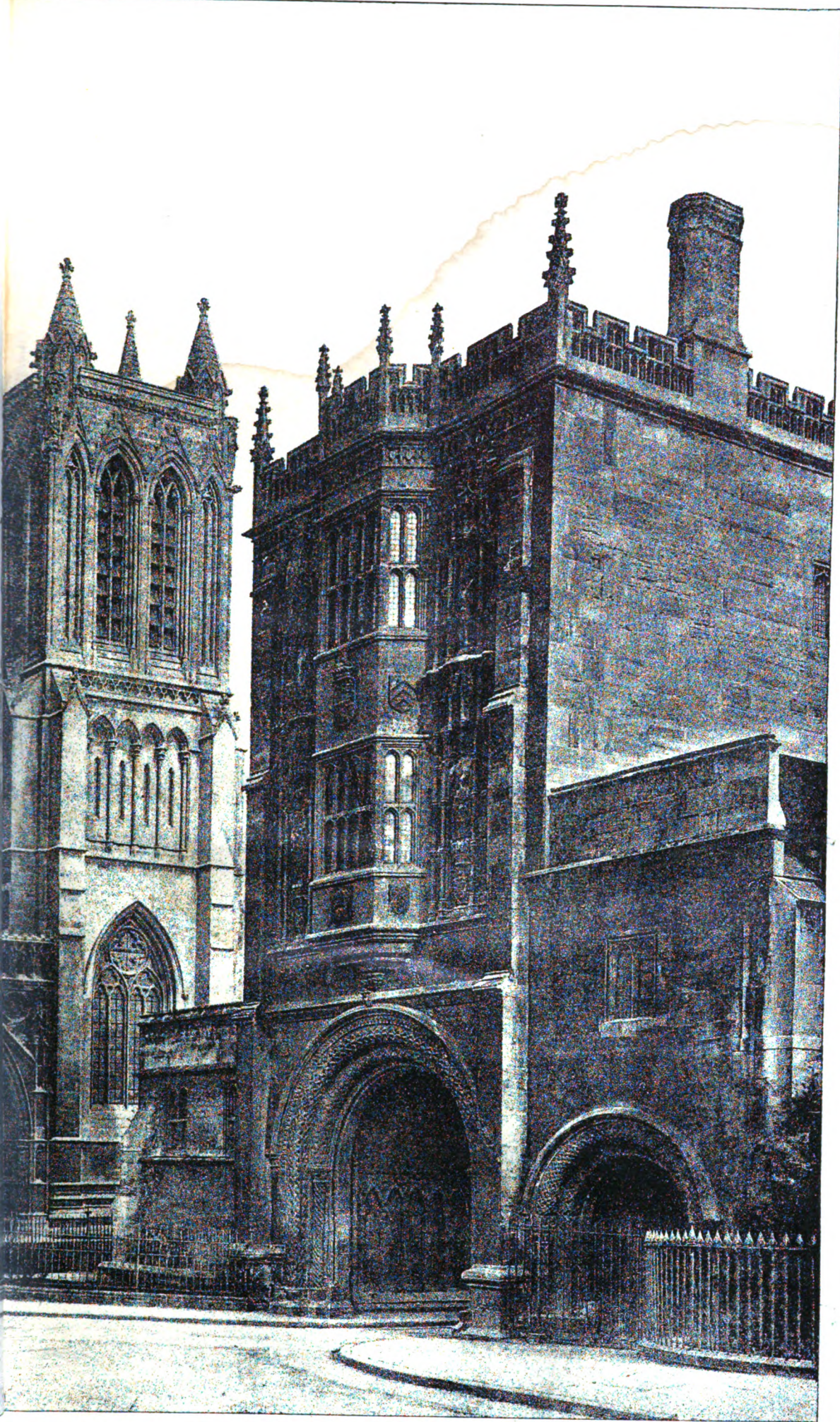


BAS RELIEF IN THE CHURCH OF S. GIOVANNI CRISOSTOMO, VENICE, ITALY.

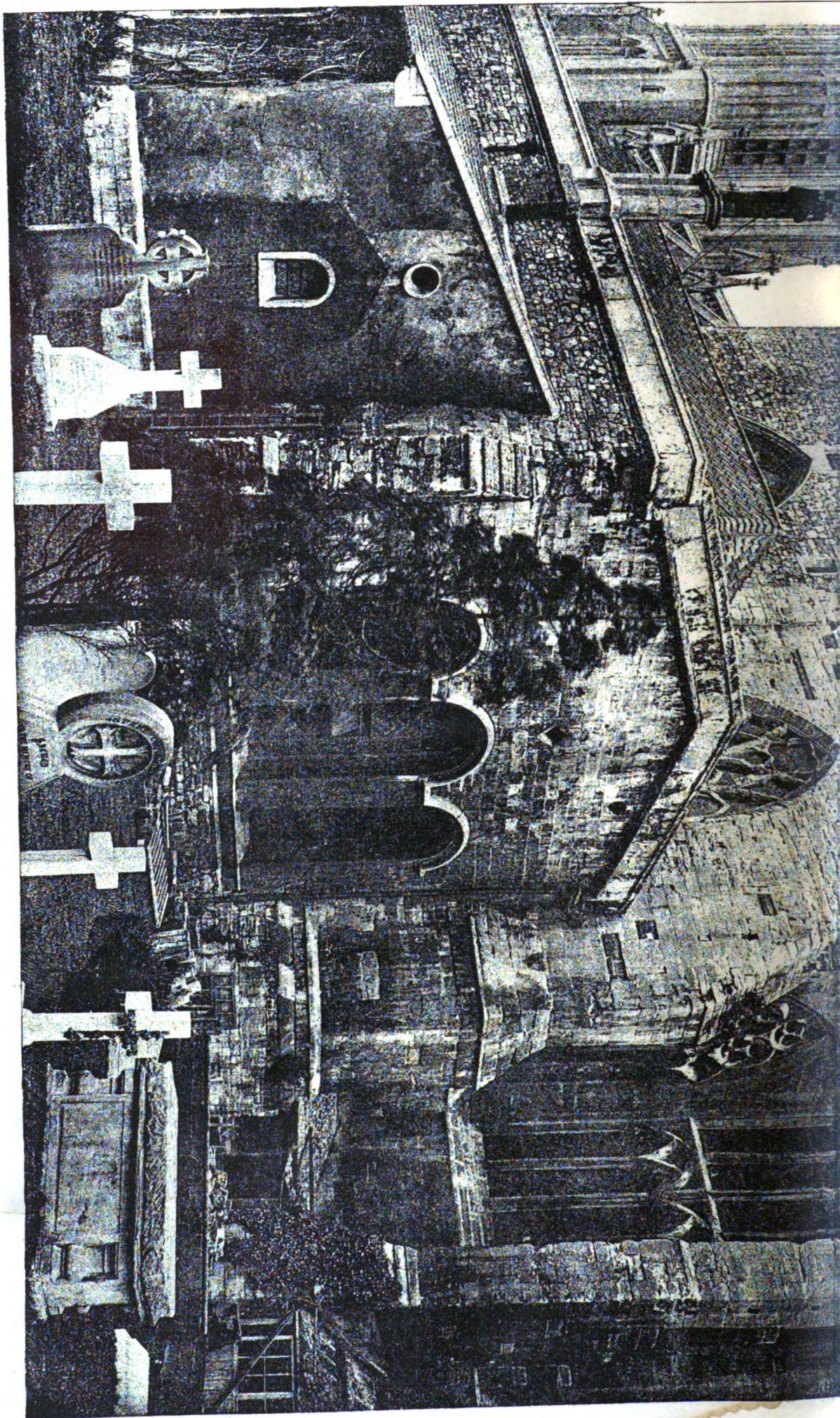
HELIOTYPE PRINTING CO., BOSTON.



BRISTOL: EXTERIOR, LOOKING SOUTH.



YOUTH-EAST. WITH GATE-HOUSE

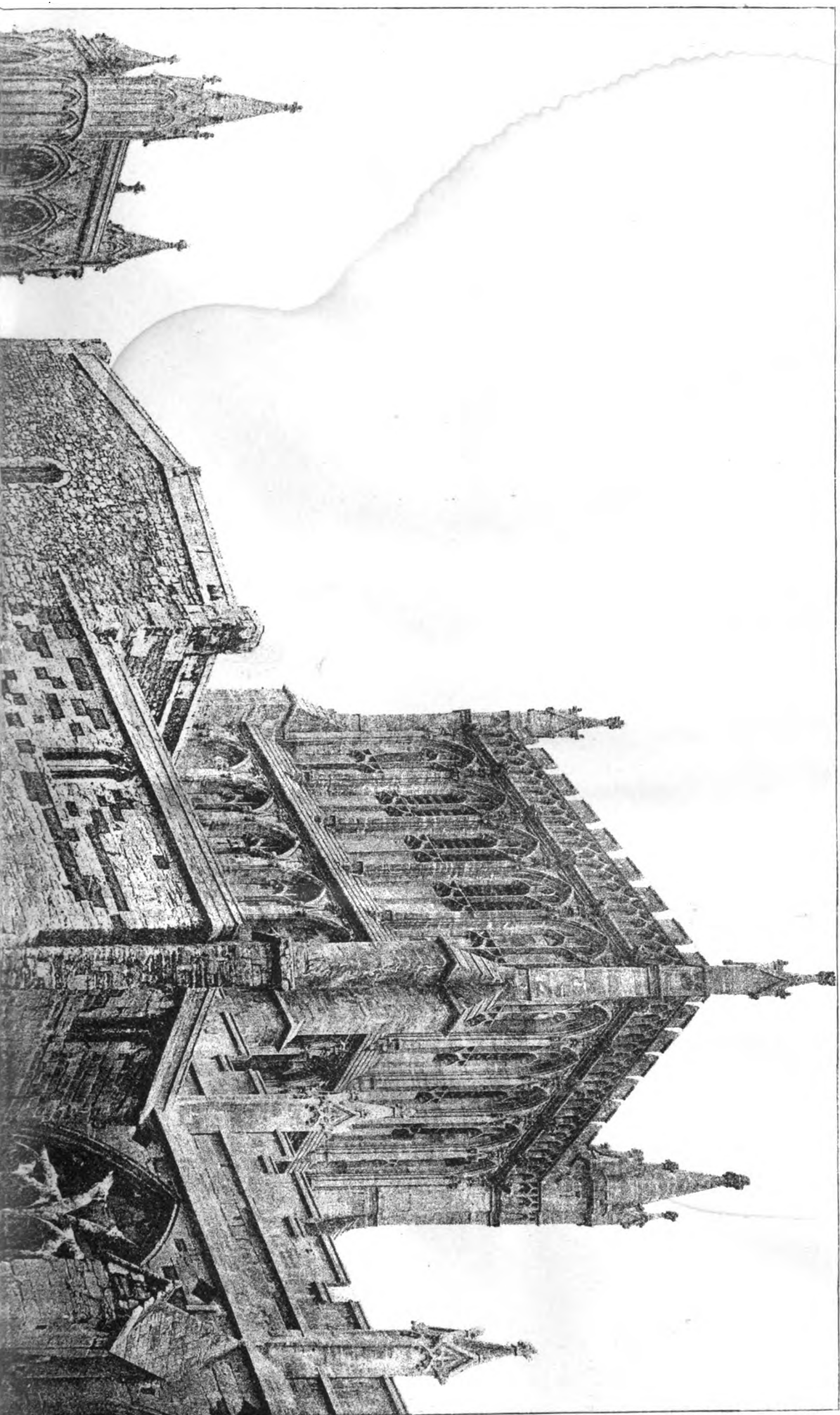


BRISTOL : EXTERIOR, LOOKING NORTH-WEST

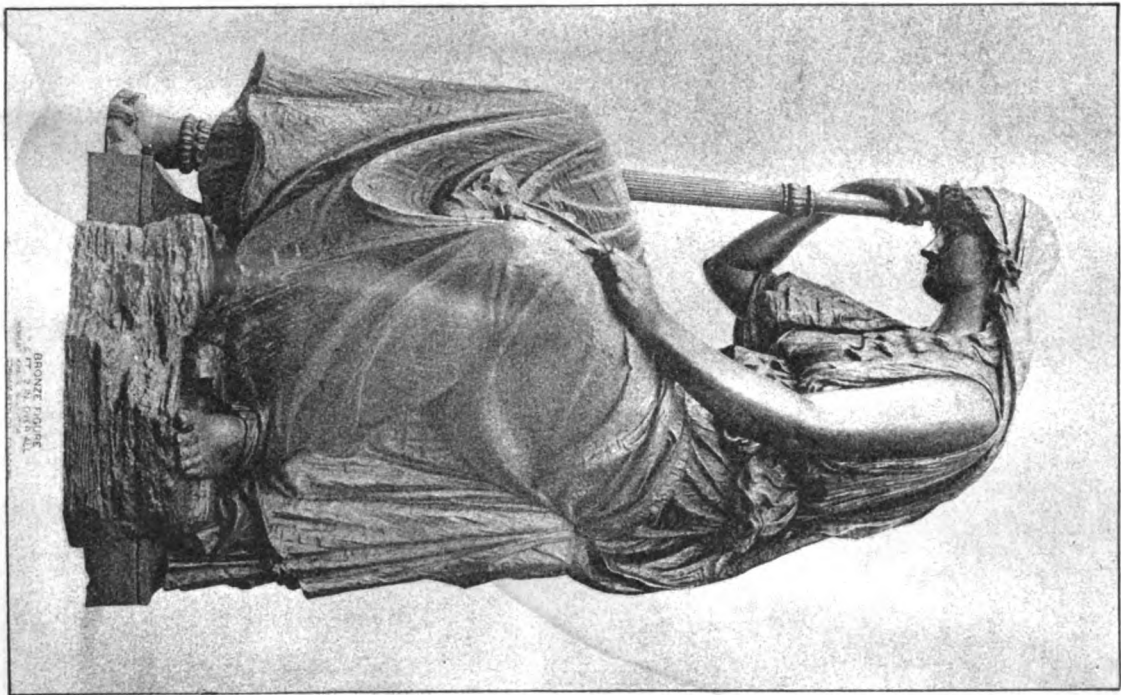
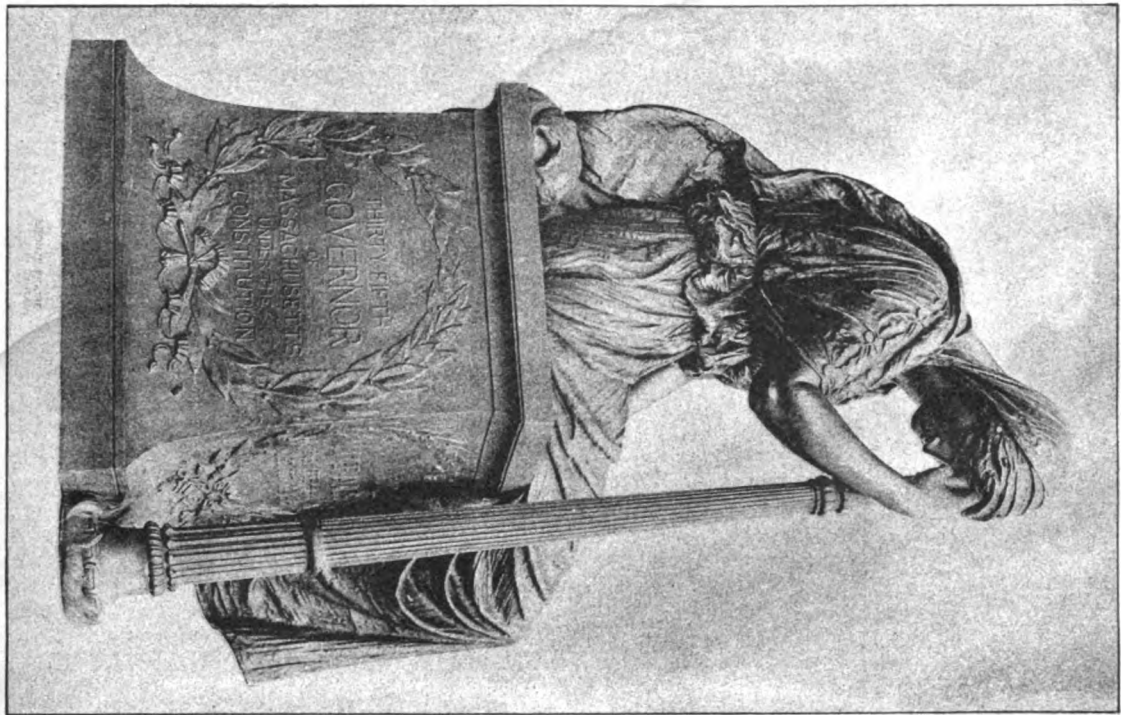
AMERICAN ARCHITECT AND BUILDING NEWS. NOV. 15, 1899.

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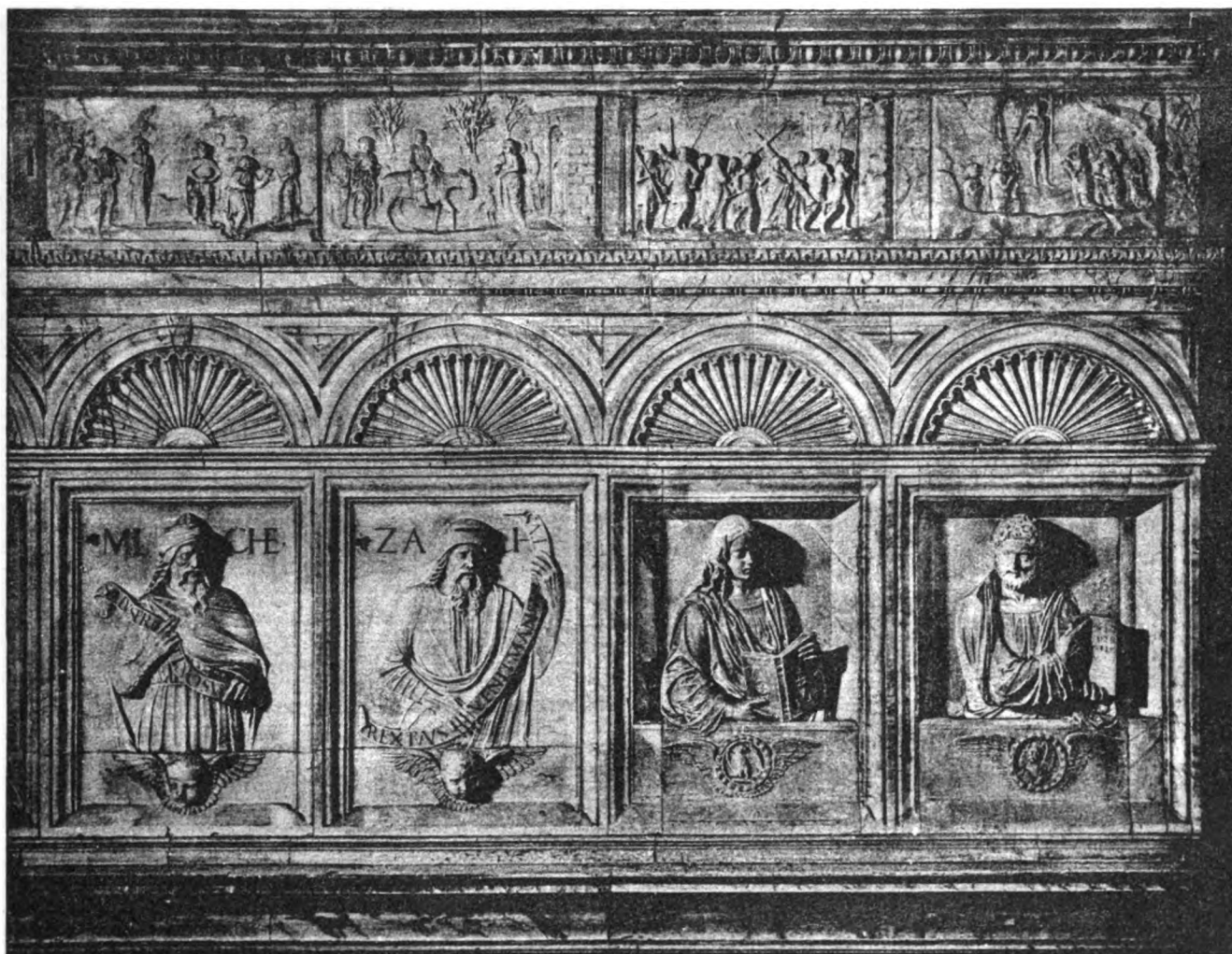
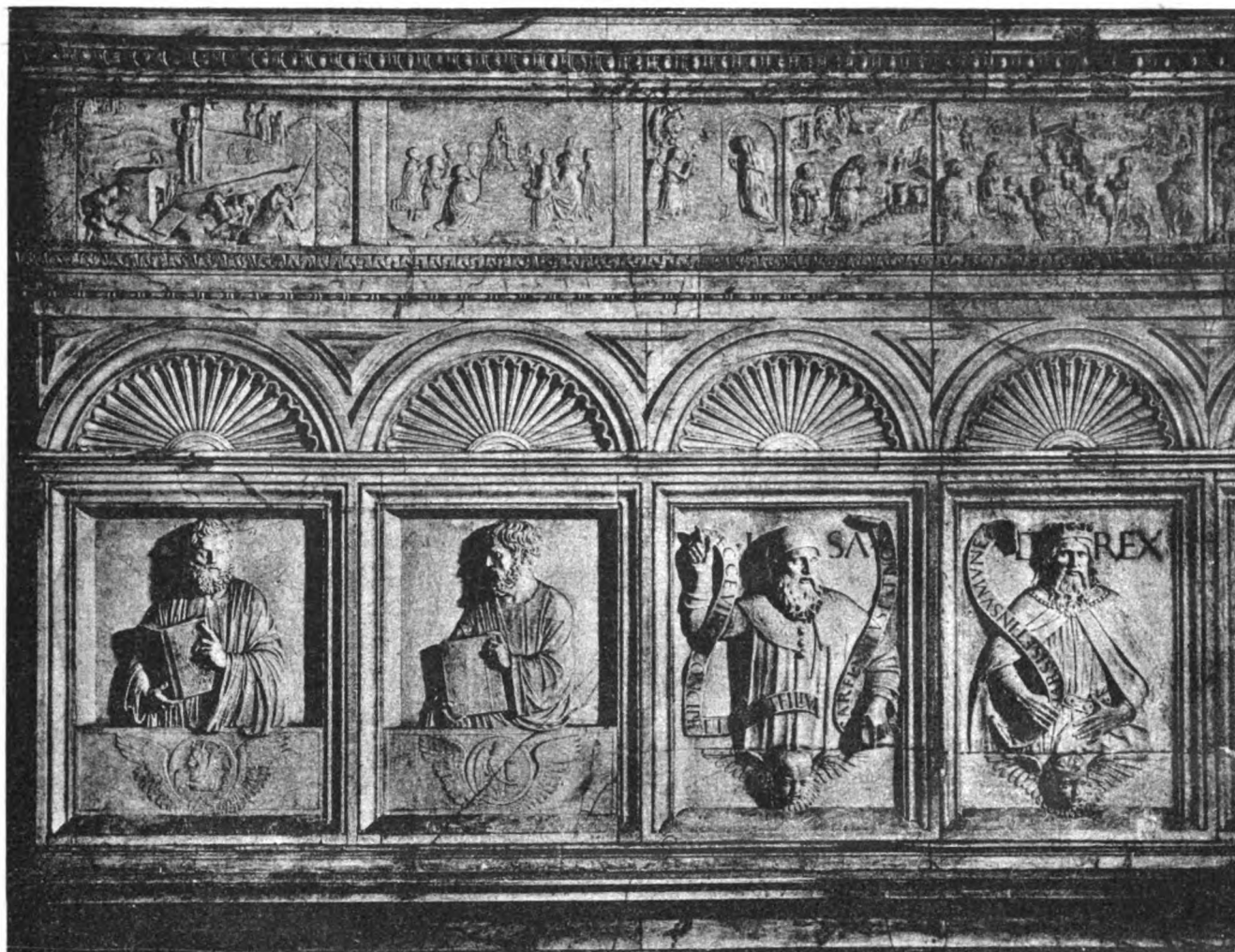
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STATUE FROM THE TOMB OF GOVERNOR OLIVER AMES.

BRONZE FIGURE
BY J. S. COLEMAN

AMERICAN ARCHITECT AND BUILDING NEWS CO.



PROPHETS AND EVANGELS IN THE GIUSTINIANI CHAPEL, CHURCH OF S. FRANCESCO DELLA VIGNA, VENICE, ITALY.
THE LOMBARDI, SCULPTORS.

Negative by H. H. Siddons.



Heliotype Printing Co.

STAIRCASE HALL: HOUSE OF ROBERT MCMASTER GILLESPIE, ESQ., TUXEDO PARK, N. Y.
HOWARD CAULDWELL & MORGAN, ARCHITECTS.

of choice design and color, by Mr. Dearle, wrought by Miss Pilkington; an "Altar Frontal," by Mr. and the Misses Cooper; and Mr. A. Vallance's "Screen" and "Cushion," executed by Miss Haggett. The Misses Lucas have designed and embroidered a cushion and twelve d'oyleys, having a beautifully-formed peacock in the centre in blues and greens, shading off to white where the wings join the body. The peacock is rather a favorite design this year.

The well-known names are fully represented, viz, Messrs. Voysey, Lewis Day, Walter Crane, Heywood Summer, etc., many of their designs covering the walls in the form of textile fabrics in various styles of excellence. There are, also, some good specimens of carpets hanging from the balcony, from Morris & Co. and other firms. Some of the wall-papers would be trying to live with, notably Mr. Crane's "Cockatoo and Pomegranate." The colors are beautiful and so is the design, but there are ten times too many of these large cockatoos introduced.

Colored drawings are shown for various costumes worn in the "Art-workers' Guild Masque," performed so successfully at the Guild Hall, London, this summer. They are all very charming and suitable. In "The Dance of the Five Senses," each sense is characterized; one holds a rose to his partner, another plays on some instrument, and a third takes the hands of his.

The quaint but pretty lamps used on the occasion hang in the central hall, where is also the figure in armor of "The Knight Greatheart," life-size and life-like.

Mr. Cobden-Saunders's bookbindings are in keeping with his former world-famed achievements, leaning now to the austere, and now to the luxurious. He is, however, equalled, if not excelled, by Mr. D. Cockerell in variety, brilliancy and appropriateness of design, joined to excellency of workmanship; and almost as good work is done by Mr. Sangorski and Miss Alice Pattinson.

Mr. Rickett's clever though trivial design is carried out by Zahndorf, and some dainty volumes are the work of the Misses Talbot.

One cannot but regret the tendency of many followers of William Morris to that over-decoration which distinguishes several of the illustrations. The best come from the *Chiswick Press*, and are from the hand of Mr. Anning-Bell, "The Poems of Keats," for example. The Birmingham School is solely represented by Mr. New, who is, unfortunately, sacrificing himself to convention. He has, however, two very good portraits in black-and-white. Mr. Walter Crane, always at his best in this branch of art, sends capital end-papers for "Bluebeard," "The Baby's Own Alphabet," "Sleeping Beauty," etc.

It is impossible to mention in detail the agreeably-fantastic pieces of jewellery, in which, however, the execution, as a rule, falls behind the ambition of the artificer; or the enamels, sometimes a principal, sometimes a subordinate feature of shrines, caskets, mirrors, boxes and personal ornaments. Some of the best things come from Birmingham Municipal Art School and among those who exhibit their designs and work may be mentioned the Misses Hallé, Noufflard, May and Jane Morris, Mr. and Mrs. Gaskin, Nelson and Edith Dawson, Mr. Ashbee, Mr. H. Wilson, the Central School of Arts and Crafts, and the Ranees of Sarawak, assisted by Signor Volpi. This lady's work, designed and executed by herself, is a charming little "Cloisonné Enamel Box" in silver, with enamels of white and green—the upper part of the hamp enclosing a large turquoise, the whole of exquisite finish. This lady also sends a clasp in silver and cloisonné. There are many clasps for belts and cloaks, some entirely of silver, and many in silver and enamel. Of the former, the palm must be given to those by Messrs. Fowler and Birkett, one in the form of peacocks being especially fine in design and workmanship. The finest of Mr. Alexander Fisher's enamels scarcely sustains his reputation. Mr. R. Rathbone's "Silver Casket set with Jade" is an admirable piece of work, as is the "Presentation Casket" used in conferring the freedom of Carlisle on the Speaker of the House of Commons. All Mr. Ashbee's exhibits in the form of jewellery and other small things are particularly good in design and finish. An interesting "Loving-cup and Tray" composed of silver and beaten-bronze is lent by a member of the old Border family of Swinton, for whom it was made by Edith and Nelson Dawson. The armorial badge on the tray is a hog eating acorns beneath an oak tree. Around the bowl of the three-handled cup runs the enamelled motto, immortalized by Scott: "Be faithful, brave, and O, be fortunate." Messrs. Dixon and Webster are represented by some silver articles for the table, of particularly good form, and which, with other such, should certainly improve the designs of our silversmiths generally. They are, almost without exception, utterly devoid of ornament. Many of the brooches, pins and enamels are exhibited by Liberty & Co. De Morgan & Co. send some fine "Lustre Pottery," and there is a large case of "Blown Glass," sent by Powell and Co., whose beautiful works are of world-wide celebrity.

Exhibitions such as those under notice demonstrate that the Municipal Art Schools scattered over the land are doing good service, and are carrying out the example of the inaugurator and founder of the movement for revival, and that, however slow its progress may be, and far short of the goal in view, it is steadily advancing and that the general influence has been for good, and in no case more notably than in that of the Birmingham School.

What may be called the *sanctum sanctorum* of the exhibition is the south room, devoted exclusively to works by William Morris. Of their variety and range there is abundant evidence, but, as has

been observed, "though instructive to craftsmen and interesting to others to see all these proofs of his activity, we must remember that by assembling together many things never meant to be used together, the Society has put it out of our power to judge the artist in every way at his best." With all the variety there is consistent arrangement, quite refreshing after the want of it in the other rooms. The hangings form a sort of frieze round the walls; below are Morris's working-drawings for his many fabrics, of genuine value to the student—which have never before been exhibited. Here are his own colored drawings for wall-papers, which, even now, it is not easy to improve upon. In Mr. Mackail's "Life of Morris," to which we are indebted for many interesting facts, we are told that he made nearly eighty designs for papers and nearly forty for chintzes, and counting variants for colors, the number was nearly four hundred, every one his own individual work. The cartoons for stained-glass are grouped around Morris's only finished easel-picture—"La Belle Iseult"—hung with the Rosettis two years ago. It was sold for £70, but has, after many wanderings, returned to the possession of his family. The room in which the lady stands is furnished after the artist's own heart, but its beauty is marred by her ungraceful figure and unprepossessing face; and after painting it Morris very wisely gave up that branch of art. Lent by the South Kensington Museum is an example of his tapestry—"The Four Seasons"—four female figures, suitably attired, holding a scroll. Its colors have suffered from exposure. The large Hammersmith carpet is spread over the floor of the gallery—the colors are not pretty, but, doubtless, would look well with suitable furniture upon it.

When Morris & Co. first launched this new venture they issued a circular in which occurs this sentence: "that the art of carpet-making in the East is either dead or dying, and that our carpets, to be worth the labor and money such things cost, must be hand-made at home."

Around the room are seven cases, containing trial-pages for borders, title-pages and initials; manuscripts written and ornamented by Morris. On one of these, a translation of his from the Icelandic, is written: "I wrote it all myself and did all the ornament throughout the book myself, except the laying-on of the gold-leaf on three pages, which was done by a man named Wildar, a workman of ours. William Morris, 26 Queen Square, Bloomsbury, London, April 19, 1871."

Many MSS. are lent by Lady Burne-Jones; some are on paper, others being on vellum. Three cases are filled with books printed at Kelmscott Press on paper and vellum. The lamb-skin vellum was obtained from Rome, but, owing to the constant demand for it by the Vatican, skins could not always be got. English vellum was not suited to fine work, but after many trials an English maker succeeded in producing some sheets nearly equal to the Roman. Morris knew what he wanted and spared no pains to get it. He spent some time at Gobelin's to master the tapestry weaving—thoroughly studied dyeing at the Staffordshire dye-works, by which he was enabled to create new colors, and Mrs. Holiday, one of his later pupils, says "there was a peculiar beauty in his dyes, and that a large, rich hank of his gold—a special sort—when spread out looked like a sunset sky."

The immense energy of the man was amazing. In his designs there is an expenditure of imaginative force which alone might make the fame of an artist; add to this his artistic printing, in which he invented his own types, decoration, paper—then consider the amount of literary work produced by him.

Many are of opinion that "The Loves of Gudrum" is his finest poem. He worked at it from four o'clock in the morning till four in the afternoon and when he rose from the table he had composed 750 lines! He took a lively interest in the defence of public buildings, especially Peterborough Cathedral, which he had admired from boyhood, regarding which he puts the following speech into the mouth of an old wanderer who had seen the magnificent west front rising. The words form part of the introduction to "The Proud King's Tale," and may be of interest to your readers.

"I who have seen
So many lands, and midst such marvels been
Clearer than these abodes of Outland men
Can see above the green and unburnt fen
The little houses of an English town,
Cross-timbered, thatched with fen reeds, coarse and brown,
And high o'er these three gables, great and fair,
That slender rods of column do appear
Over the minster doors, and imagery
Of kings, and flowers no summer field doth see,
Wrought on those gables. Yea, I heard without
In the fresh morning air, the trowels fall
Upon the stone, a thin noise far away;
For high up wrought the masons on that day,
Since to the monks that house seemed scarcely well
Till they had set a spire or pinnacle
Each side the great porch. . . . I am now grown old,
Yet is it still the tale I then heard told
Within the guest-house of that minster-close,
Whose walls, like cliffs new-made, before us rose."

An eminent physician said of his case, "the disease is simply William Morris; and having done more than any ten men."

It was a remarkable coincidence, that on the night of William Morris's funeral, which was exceedingly wet and stormy, the rain found its way through the roof of the Union Debating Library at Oxford, and washed out a large piece of the remaining frescos, to which such interesting memories were attached in connection with Morris and the pre-Raphaelite Brotherhood.

A sonnet by Mr. Edmund Reuter, beautifully illuminated, is framed, and hangs in the balcony, which may fitly close this article.

WILLIAM MORRIS.

"IN MEMORIAM."

Mourn ye for him, ye fabulous ones of old,
Ye tragic Kings and Queens of ancient song;
Heroes of Greece and northlands wild and strong,
Mourn for the bard who best your deeds has told.
Tulip and Rose, Acanthus, Vine of Gold,
Columbine, ever swirl and twine among
Entangled birds and angels, keeping long
His memory green on wall and arras fold.
About his grave let poppies bloom and fade,
And daisies stud the sward where he was laid.
Will not his labors stand and help to rear
Through weather fair and foul those dreamlike walls
And roofs where at the last his ransomed thralls
The King of Kings will shelter from all fears?

BRIDGES IN OLDEN TIMES.

LONDON Bridge can only claim a lifetime of about seventy years, but it can boast a long ancestry, and doubtless some much older masonry remains. Before there was any bridge here at all a ferry plied between Southwark and Churchyard Alley. The ancient song, "London Bridge is Broken Down," points to the early pagan practice of building living people into the stonework of bridges to ensure their permanence; and it would seem that this barbarous thing was done with the first London Bridge. The stone bridge was commenced in the year 1176, but there had been an earlier wooden structure, and in this case the walling-in of living victims may more likely be referred to the first bridge, whether of wood or stone, than to the later one. Much pleased by the bridges he saw in France, King John brought over a skilled French workman; and he resolved that the revenue arising from the houses he should build on the bridge should be devoted to the proper repairing of the fabric. The arches were narrow, sometimes causing accidents to boats passing underneath; and occasionally it seems that whole blocks of the houses, falling in bad repair, would topple over into the river. One of the twenty arches was used to form a drawbridge. The bridge gained a sad notoriety as the resting-place of the decaying heads of condemned men, often mis-called "traitors." The old Bow Bridge, built by Queen Matilda at Stratford-atte-Bow in the twelfth century, survived till lately in a much-restored condition; the charge of it was given by its builder to a religious house hard by. It was a simple stone structure, of three arches, and was not only often in bad repair, but was used by its keepers to extort money from passengers. From the frequency with which the prefix bridge occurs in the names of places, one might imagine that many of our towns and villages have been named from their bridges, and such is indeed often the case; but in many other instances the prefix comes really from the name of St. Bride, or Bridget, one of the most popular of Celtic saints. At another Stratford, that situated on the Avon and destined to world-wide fame, there was in Leland's time a poor bridge of timber, so insecure that "many poore folks and other refused to come to Stratford when Avon was up, or commynge thither stood in jeopardy of lyfe." It remained for Sir Hugh of Clopton, once Mayor of London, to erect the existing fine structure, which, says Leland, "hath fourteen great arches of stone, and a long causey made of stone, lowe walled on each syde, at the west ende of the bridge." This was the bridge that Shakespeare knew, and to all intents and purposes it is the bridge that still stands. Another bridge still existing is interesting in that we possess the original contract by which it was built. After giving minute particulars as to how this bridge at Chatterick should be built, the document ends: "And ye saides John, Tho., and Rob., schalle this forsaide brigge sufficiently in masoncraft make and fully per-furnist in all partiez and holy endyd be ye Fest of Saint Michille ye Arch-angelle quilk yt shalle fall in ye yere of our Lorde Gode Me. CCCXXV." The price for this Yorkshire bridge is also stipulated. Sometimes the maintenance of bridges was provided for by tolls, sometimes by alms, sometimes by the church's indulgences. Persons frequently contracted to keep a certain bridge in order in return for the toll; and in those days it goes without saying that the exacting of the toll was more rigorously exercised than the reparation of the bridge. A form of application for such rights exists whose date is probably the early fourteenth century. It is as follows: "To our lord the King prays his vassal William of Latymer, lord of Yarm, that he will grant him pontage for five years at the bridge of Yarm, which is broken down, where men were wont to pass with carts and with horses on the king's highway between the water of Tees towards Scotland. May it please him to do this for the soul of Madame his consort, who is to God commended, and for the common profit of the people who pass." The application was granted.

The famous Devil's Bridge of North Wales, more accurately named the Pont-y-Mynach, was almost certainly built by the monks of Ystrad Fflur: it spans the chasm with a single arch, like its namesake of the Gothard Pass. The Parson's Bridge, two miles off, originally consisted of a mere tree-trunk. The common occurrence of "pont" in Welsh place-names bespeaks a plentiful supply of bridges, and indeed a great need of them. Where bridges were endowed, or kept in repair by means of taxes and dues, the result

was often most satisfactory; but in cases where the structure was erected and then left to the wear and tear of time, and to the mercy of the elements, folk were almost worse off with it than without. A fancied security led many to their death. Alms, such as those solicited for the old stone bridge at Tavistock, were often insufficient, and sometimes these bridges were washed away altogether by floods. We read how a clerk, entrusted with a sum of money to be delivered to Edward III, was "drowned in the Severn, at Montford Bridge, by the rising flood of water, and could not be found, so that he was devoured by beasts; thus the said hundred marks chanced to be lost." The beasts, if that surmise was correct, might have been wolves, though they were rare then. Repeated accidents were often necessary before any proper reparation would be done. It is little wonder that bridges were often placed under the care of saints, and that not seldom small chapels were built on the bridges themselves. Such is the surviving chapel on the bridge of Wakefield, a fine specimen. Many bridges had defensive towers at one or both ends; these, of course, were for defence against human assailants, not against the elements. A good example exists at Warkworth; but in other cases the towers, no longer needed, have been ruthlessly pulled down, and an interesting architectural feature sacrificed. Our age considers utility rather than beauty. — *Household Words.*

BOOKS AND PAPERS.

THE series of monographs of the great masters in painting and sculpture which Messrs. Bell intend publishing at intervals of a month or so starts well with "*Bernardino Luini*,"¹ one of the most fascinating of painters, whose works are numerous and well known, but whose life remains, for the present, enshrouded in mystery. Vasari only mentions him casually, and miscalls him Lupino; but it is generally supposed that his birth took place between the years 1465-75 at Luino, on the Lago Maggiore. In 1533 he disappeared, after finishing his great fresco at Lugano, the last notice of him being the entry in the books of the convent giving the sums he received for the work — in all, 244 *lire*. Between these dates, some sixty years "he labored," as Mr. Ruskin says, "in constant and successful simplicity." Luini was essentially a fresco painter, although he has left many easel-pictures; but his work was so thoroughly decorative that it is seen at its best upon the walls of the many churches which he glorified. His instinct was religious, as much so as that of Fra Angelico; and, withal, Luini possessed far more artistic power. "He entirely united the religious temper" (to quote from Mr. Ruskin's "*Queen of the Air*"), "which was the spirit life of art, with the physical power which was its body life. . . . He has left nothing behind him that is not lovely, and is, perhaps, the best central type of the highly-trained Italian painter, hard-working, industrious, who labored with his whole heart and soul. . . . Child of the Alps and of their divinest lake, he is taught without doubt, or dismay, a lofty religious creed. . . . Whether lessened by Leonardo himself, as merely one of many disciplined in the system of the Milanese schools, he learns unerringly to draw; unerringly and enduringly to paint."

Kugler, of course, considers Luini to have been a disciple of Leonardo; but surely there is sufficient beauty in the work of Luini not to desire to belittle him by making him a mere copyist of da Vinci. That there is a certain similarity of style, no one will deny; but Leonardo's fame rests so much upon tradition that it is difficult to compare the two artists justly. As Mr. Williamson says, "the *Cenacolo* is a wreck" (to be studied most satisfactorily by the copy in the Royal Academy's Diploma gallery, London), "the 'Battle of the Standard' was never painted in oils, the 'Adoration' in the Uffizi is little more than a cartoon, the 'St. Anne' unfinished, the 'Mona Lisa' weird and mysterious." To some of us, Luini's work has a charm of sentiment, of beauty and of color, that da Vinci's does not possess; and luckily we have Mr. Ruskin on our side: "Luini," he says, "is ten times greater than Leonardo, a mighty colorist, while Leonardo was only a fine draughtsman in black, staining the *chiaroscuro* drawing like a colored print. Luini perceived and rendered the delicatest types of human beauty that have been painted since the days of the Greeks, while Leonardo depraved his finer instincts by caricature, and remained to the end of his days the slave of an archaic smile." These words, quoted by Mr. Williamson, exactly express our feeling towards that acme of slyness, "Mona Lisa," and endorse the sentiments called forth by such exquisite work as Luini's "Madonna and Child," in the Layard Gallery, Venice (where Our Lady, for once, appears really young); and above all, in that most perfect fresco at Lugano, the lunette of the "Madonna with Our Lord and St. John."

In the painter's early work, we feel the influence of Bargagnone, and especially in the "Crowning of Christ" in the Ambrosian Library at Milan, where, on each side of the picture, a row of kneeling men is depicted, resembling, in the various types of face, that quaint group of portraits by Bargagnone in the National Gallery, London.

Luini's finest work is to be found at Legnano, Ponte, Saronno, Como, Milan and Lugano, and most of it was accomplished in eleven

¹ "*Bernardino Luini*." By G. C. Williamson, Litt. D. George Bell & Sons. London: 6s. Illustrated.

[illegible]



HALF-TIMBERED DWELLING-HOUSE ON THE HOLZMARKT, HALBERSTADT, PRUSSIAN SAXONY.

short years. At the Church of S. Maurizio, Milan, a whole scheme of decoration was undertaken for the high altar. On each side are standing-figures of saints, with subject lunettes above, representing the donors, Alessandro Bentivoglio and his wife, Ippolita Sforza, and their patron saints. The altar-piece is not Luini's work; but all that is above and at the side of it was painted by him.

The large fresco at Lugano can really only be studied in the original, being of such immense proportions that reproductions fail to give the details with sufficient clearness. It is a somewhat confused composition, but those who see the original cannot fail to be struck by the religious fervor expressed in so many of the faces; and all of us who have visited Ammergau will recognize the exactness with which many of the scenes are copied by the peasant-actors. To quote our author, "the wondrous beauty of many of the separate faces, the charm of the distinct groups, each with a certain grace in composition of its own, the perfect drawing of the important figures in the foreground, and the verve and movement of the whole picture, set in a deep vibrating chord of rich coloring, cannot fail to attract. Above all, the entire composition is charged with an intense devotional spirit, and the artist was most evidently striving to render as well as he possibly could, and with all the religious enthusiasm of which he was capable, the events of the world's tragedy." For ourselves this fresco has always been the most satisfying of all renderings of the incidents of the "Passion of Our Lord," as treated in the old masters' comprehensive, non-natural manner. Then, apparently, came the end, and "Luini passed away cloudlessly, the starry twilight remaining arched far against the night." (Ruskin.)

Mr. Williamson gives a useful catalogue of Luini's works, at the end of the book, with their original and present owners, their measurements, mediums, where exhibited of late years and other descriptive details; and, also, a bibliographical list of authors and authorities consulted and studied, which is exhaustive in its fulness, and which proves that the author has not spared himself time or trouble in trying to throw fresh light upon his subject, and in his endeavors to make the book a success. The illustrations add to the interest of the book not a little, and herein lies the value of photography; not only in illustrating such works, but in enabling an author to study and compare, in his own room, the reproductions of pictures which are scattered about Europe, hundreds of miles apart.

From the same publishing firm we note a little handbook upon Spain¹ which should prove useful to travellers in the Peninsula. It is cast in a practical mould, giving tours taken from Spanish time-tables—an excellent plan, as those ignorant of the language can point to the places in the list; also, some hints as to hotels, dress, money and the like, besides a map and an index. It is noteworthy to find that hotels are moderate-priced and clean, and garlic is not mentioned in their "excellent cookery." Some useful little outlined plans are given here and there, and many very good reproductions of photographs, mostly by the author, increase the interest of the volume.

The cathedrals with their magnificent specimens of wrought-iron work, of course, have the largest share of the book; but the author, being observant, notes the picturesqueness of the market-places, and other things. There is still a good deal of artistic work left in Spain, and a few moderns claim our admiration. A photograph of the "Agony in the Garden," a large group in carved wood which is carried in processions at Murcia, strikes us as being a very fine specimen of Zarcillo's work. It is, of course, marred by the embroidered-velvet garment worn by the Saviour; but the angel's face is especially beautiful and expressive. The sculptor was working about 1763, and Murcia possesses several of these groups in wood. The author professes to be no connoisseur of painting, and, therefore, one is not surprised to read, "I believe that the marvel of Velasquez is that he painted *olla prima*, i. e., that he had not to go over and over again, working up his picture"; and then to find that Murillo's lovely "Children with the Shell," his divine visions of saints in ecstasy, glow "in their own peculiar haze . . . before one's very eyes." The useful kindness of the police in protecting visitors from the rabble of children, the cleanliness and well-to-do-ness of the people, their courteousness, regardless of, and often refusing, tips, strike one as the last characteristics one would expect to find in Spain. But the Spain of to-day seems to be a pleasant place to travel in.

At the end of the book are some illustrations of architectural terms, which would have been exceedingly useful if the draughtsman had been content with plain Roman type in naming his "terms." As they stand, the fantastic lettering is quite confusing, and requires too much time and light to decipher, especially in a guide which is intended for hurried visitors to use in dark churches.



PHILADELPHIA T-SQUARE CLUB.

THE T-Square Club held its regular monthly meeting on Wednesday evening, November 1. Thirteen designs were submitted in the second of the series of mutually-related competitions and the average of which the European Travelling Fellowship will be

awarded, several having been sent from a distance by non-resident members. The competition was judged without reference to what had gone before, as all will be, except the last two competitions in which the various elements of the design will be considered in relation to each other. The subject was therefore, virtually, "The Plans of a Philadelphia Suburban Mansion," and the Mentions were awarded by vote of the entire Club, after an informal criticism by Messrs. Kellogg and Dull, to Richard L. Watmogle, first; Wethrell P. Trout, second; I. Edgar Hill, third.

The T-Square Club adopted as its standard for the conduct of competitions the "Code governing Competitions" arranged by representatives of several architectural clubs, of which the T-Square Club was one, meeting at New York last year. During the month the T-Square Club was given a reception by the management of the Free Library of Philadelphia, which was desirous of introducing to the profession the handsome collection of architectural work in the Pepper Memorial Library. ARTHUR S. BROOKE, Secretary.

NEW YORK CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

I AM instructed by the New York Chapter of the American Institute of Architects to forward to you for publication the following resolutions, which were adopted at the special meeting of the Chapter held on November 1, 1899, and which were forwarded at once to Hon. Lyman J. Gage, Secretary of the Treasury:—

Whereas, The selection of the Commission to pass upon the designs for the New York Custom-house is a matter of regret, and

Whereas, The New York Chapter of the American Institute of Architects cannot approve of the methods adopted by this Commission in arriving at a decision, nevertheless

Resolved, That in the absence of other evidence of want of good faith on the part of this Commission than has been made public, it is to the best interest of the architectural profession that the award of this Commission be confirmed by the Secretary of the Treasury.

CHARLES I. BERG, Corresponding Secretary.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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[Gelatin Print issued with the International and Imperial Editions only.]

BAS-RELIEFS IN THE BASILICA OF S. ANTONIO, PADUA, ITALY. TULLIO LOMBARDO, SCULPTOR.

BAS-RELIEF IN THE CHURCH OF S. GIOVANNI CRISOSTOMO, VENICE, ITALY.

PROPHETS AND EVANGELS IN THE GIUSTINIANI CHAPEL, CHURCH OF S. FRANCESCO DELLA VIGNA, VENICE, ITALY. THE LOMBARDI, SCULPTORS.

For description of this and two preceding plates see article, elsewhere in this issue, on "Santa Maria dei Miracoli."

TWO TOMBSTONES DESIGNED BY MR. ROBERT BROWN, JR., ARCHITECT, BOSTON, MASS.

BRONZE FIGURE FOR THE TOMB OF GOVERNOR OLIVER AMES. MR. ROBERT KRAUS, SCULPTOR, BOSTON, MASS.

[The following named illustration may be found by reference to our advertising pages.]

HOUSE OF F. P. MUHLHAUSER, ESQ., CINCINNATI, O. MESSRS. DES JARDINS & HAYWARD, ARCHITECTS,

[Additional Illustrations in the International Edition.]

HOUSE OF ROBERT MCMASTER GILLESPIE, ESQ., TUXEDO PARK, N. Y. MESSRS. HOWARD & CAULDWELL, ARCHITECTS, NEW YORK, N. Y.

[Gelatin Print.]

STAIRCASE-HALL: HOUSE OF ROBERT MCMASTER GILLESPIE, ESQ., TUXEDO PARK, N. Y. MESSRS. HOWARD & CAULDWELL, ARCHITECTS, NEW YORK, N. Y.

[Gelatin Print.]

¹ "Cities and Sights of Spain." By E. Main. Bell: London. 3s. 6d.

HALF-TIMBERED HOUSE ON THE HOLZMARKT, HALBERSTADT, SAXONY.

[Gelatine Print.]

THE old town of Halberstadt, twenty-five miles southwest of Magdeburg, is first heard from A. D. 820, when the See was established there. It received town rights in 998, was twice burned down in the twelfth century, and was held alternately by the Swedes and Imperialists during the Thirty Years' War. Its population now is about forty thousand. Its most famous buildings are the Cathedral and the interesting Town-hall.

The dwelling-house in half-timbered construction, shown in our plate, is one of a very large class to be found not only in Halberstadt, but in many other towns of Northern Germany. It is distinguished from its fellows by its lively silhouette, and by the unusually plentiful employment of carved inscriptions in the timbered friezes that gird the façades in every story. The motif of the round-arched arcades under the windows is extensively employed here, and with complete success. The spaces between the arches, which are now smooth and bare, were formerly filled with decorative painting. The building was erected in 1576 upon a corner-lot on the Market Square. Like so many interesting old dwellings of that period, it is to be torn down, to make room for a modern structure devoted to business.

THE CATHEDRAL, WITH GATE-HOUSE, LOOKING SOUTHEAST, BRISTOL, ENG.

THE CATHEDRAL, LOOKING NORTHWEST, BRISTOL, ENG.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

"AN AWARD CRITICIZED."

NEW YORK, N. Y., November 13, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I am sorry you headed my letter of November 3, "An Award Criticized," since I said in the letter, "I do not blame the professor," and if I called the thing "a wretched affair," those words quite clearly indicate I did not consider the award wretched—rather it is the temptation held out to architects to spend their strength on what the expert referee could not have more plainly called a useless waste.

I am sorry in the editor's foot-note you did not more cordially endorse the pro-bono-publico purpose of my letter—"good to the public," who could have better study from architects if in competitions they did not have to do such a volume of useless work—good to the architect, that such nonsense as a demand for eight drawings, when only three are valued for consideration, be abolished.

We need the professional journals to help us form public opinion in this matter. Respectfully yours, ARTHUR B. JENNINGS.

[So far as the professor is concerned, we cannot see anything to criticize either in his conduct or in the requirement as to number of drawings, which was very probably prepared under his advice. It is obvious that, while a considerable number of drawings may be necessary to show a design clearly, one drawing out of each set may be sufficient to indicate whether the design shown by the set would be satisfactory or practicable. For example, suppose a competition for a building requiring a dome. Evidently, plans of every story, elevations and sections would be necessary to show whether the construction could be reconciled with the convenience of arrangement desired, yet a glance at a first-floor plan, showing supports for the dome obviously insufficient, would condemn irretrievably the whole set to which it belonged; and it would be only the sets which passed this test of crucial points that would deserve, or need receive, the more complete examination and comparison of all the drawings. In our experience, this is just the process always followed by experts in judging competitive designs. A school-house, for instance, in which the entrance-hall is without light and air, would be useless, and an examination of the first-story plan only in each set of designs for such a building is quite sufficient to eliminate sets which need no further attention; and so in regard to many other buildings. That so much time should have been wasted on their other drawings by the competitors whose designs are thrown out in this way is their fault, not that of the expert, or of the system. At the same time, we have always urged, as have also nearly all the great professional societies, that the actual labor in preliminary competitions should be made as light as possible. Drawings at a small scale are quite enough to show whether their author has understood and thoroughly studied his problem, and even whether his scheme of construction is adequate and practicable, as well as whether his plan is convenient, and his elevations beautiful. Many of the most successful competitions have been, and are, carried out in this way, and more perhaps would be, except for the influence of certain great practitioners, who keep a costly staff of competition draughtsmen, and, perhaps unconsciously, foster the taste for expensive sets of drawings, in furnishing which their superior resources enable them to shut out architects who cannot devote the time of a number of highly-paid assistants to speculative enterprises. We quite agree with Mr. Jennings that in this way the public loses the service of many highly-competent architects, and gets, in exchange, a great deal of work, the design and construction of which have been handed over to clever draughtsmen, whose work their busy employers have hardly seen, much less studied, and it is desirable

that the profession, and the professional journals, should, as he suggests, from time to time remind the public of the better way of managing such things. — EDS. AMERICAN ARCHITECT.]



BUTTE BUILDINGS INJURED BY A LANDSLIP.—For several weeks a large part of the city of Butte, Mont., has been sliding downhill. A number of large buildings and residences, including the county courthouse and the residence of United States Senator W. A. Clark, have been cracked and fissured, and geologists express the opinion that the buildings damaged are located on a seam of rock or earth along which a cleavage is taking place. — *Exchange*.

ALUMINIUM AS A CONDUCTOR.—The Chicago Record says, that aluminium is to have its first important trial as a commercial conductor of electricity on the Northwestern Elevated Road. Twenty miles of inch-and-a-half cables—150,000 pounds of the light-weight, silvery stuff—are to be strung along the steel trestle to distribute the motive-power to the trolley-rails of the new road. Aluminium displaces its copper rival on the new road because of its cheapness. Copper has almost doubled in price within a twelvemonth, while the lighter metal has dropped a shade in the scale. James R. Chapman, the electrical engineer in charge of the new road, says: "After copper, aluminium is the best conductor among the cheaper metals. An aluminium wire has the additional advantages of being lighter to handle and of being non-corrosive." According to Mr. Chapman, a perfect joint has been made possible by a solder invented by a Chicago man.

AN OLD HOUSE.—Recently a visit was paid by the Jewish Historical Society of England to Lincoln, which is recognized as the most interesting city in all England to students of early Jewish history in this country. The old Jew's House at the bottom of Steep Hill and the house of Aaron the Jew at the corner of Christ's Hospital Terrace both came in for close attention and detailed examination. As Aaron died in 1180, the house cannot be less than 750 years old, and it is absolutely the oldest private dwelling-house of stone in England, and probably in all Europe. Aaron of Lincoln was a very distinguished man in his time, being, indeed, one of the Rothschilds of the period, and when he died, Henry II seized his treasure and debts. The treasure was lost on the way to Normandy, but for many years after Aaron's death his debts were collected by a special branch of the Exchequer, two treasurers and two clerks being kept fully employed in keeping the accounts. His monetary transactions were thus obviously on an almost national scale. — *Grantham (England) Journal*.

A NEW AMERICAN ART-SCHOOL IN PARIS.—"Within a few weeks," says the *Figaro*, "the inauguration of an American School of Fine-Arts, Music, Singing and Declamation will take place in Paris. This institution is due to the untiring energy of an American lady, Miss Mathilde Smedley, who for the past four years has been laboring in behalf of an institution to shelter young Americans, male and female, who come over to take lessons of French masters. The national school about to be opened is in the Avenue d'Iéna. The Government at Washington was induced by Miss Smedley to take up the matter, and that lady is now almost certain that forty-five States of the Union will send over to the school as 'boursiers' ninety young people of both sexes, selected after a serious competition, who will form the nucleus of the school. This is only the beginning of the scheme, for it is in contemplation to build a place to receive 500 students, at a cost of 5,000,000 francs. Toward this sum Mrs. Walden Pell, honorary president of the committee, subscribes 500,000 francs; another member of the American colony, 50,000 francs, and Mrs. Frank Leslie, 125,000 francs. The school was some time ago recognized by the French Government as of public utility, and it will therefore be exempt from taxation and authorized to receive donations and legacies." The *Figaro* asserts that in France such a conception would have remained in dream-land. In America five years will have sufficed to bring it to a successful conclusion. — *The Art Collector*.

A NATURAL CEMENT BREAKWATER.—A cement breakwater at Marquette is one of the most interesting Government works on the great lakes, as it is the pioneer of a new class of construction, being the first breakwater built of natural cement. When the work was begun seven years ago many engineers doubted if the natural cement could be used in place of Portland, which sells at about three dollars a barrel, and which is altogether too expensive for such work. But experience has proved that, mixed with a small quantity of Portland, it answers every purpose, and, indeed, so well has the early-built part of the breakwater withstood the severe tests of wave action and climate to which it has been subjected that the Government has undertaken a great deal larger work of the same kind at Duluth. The alternating heat of summer and the terrific cold of winter have not cracked the cement, waves have not affected it in the least, and ice and logs which have battered it for weeks at a time have scarcely more than scratched it. It is calculated that the first year after a block is put in it will be cut down three one-hundredths of an inch by these agents, but that the abrasion is less year after year, till, when time has been given for the cement to harden thoroughly, it becomes practically nothing. Engineers say the structure will be standing in good serviceable condition 100 years from now. Twelve years is the average life of the old-style, wooden-cribbed breakwater filled-in with stone. As the cost of the concrete structure is but little in excess of the other, it is easy to see the economy to the Government in the new style. — *N. Y. Evening Post*.



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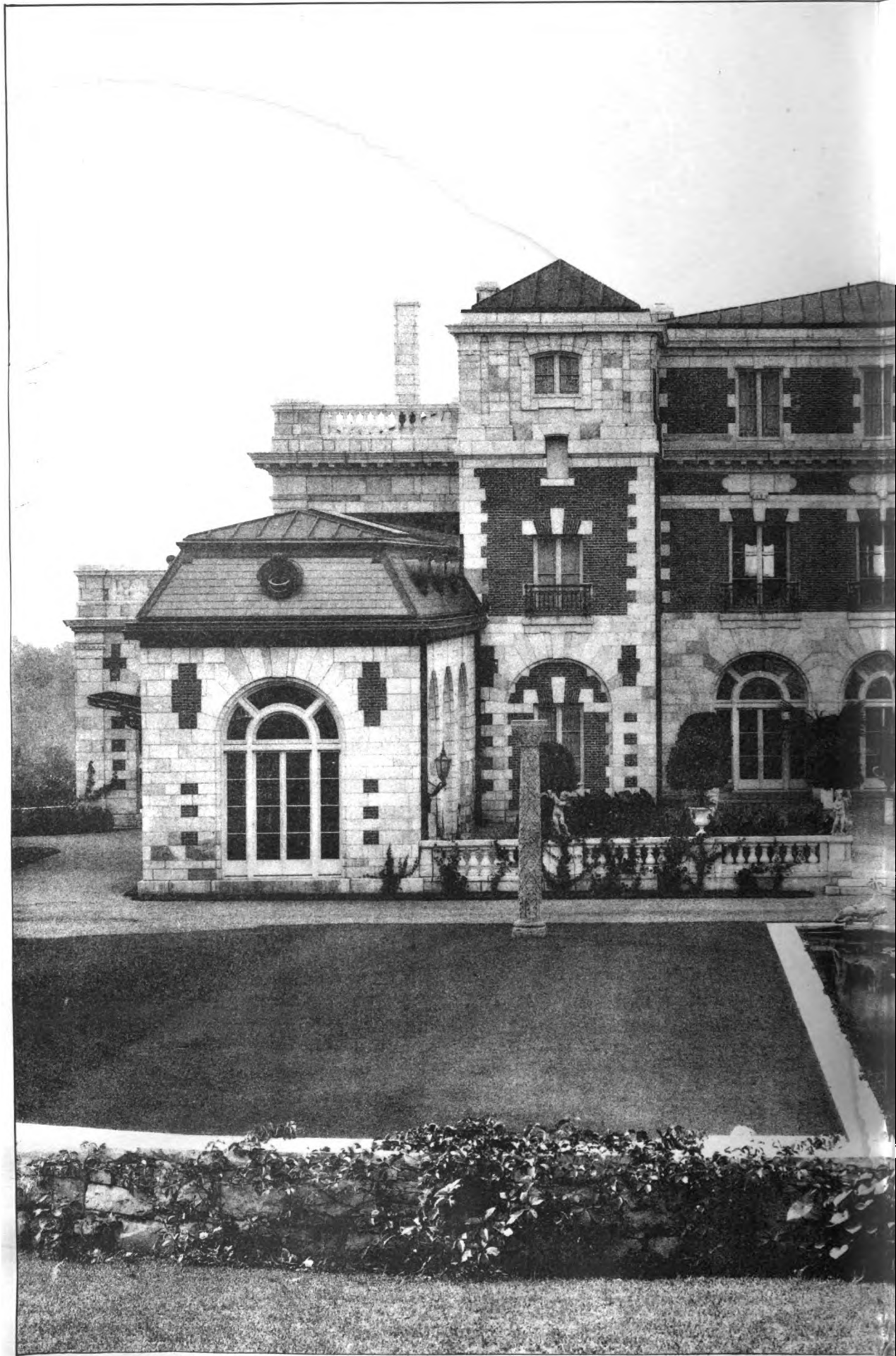


Negative by H. H. Sidman.

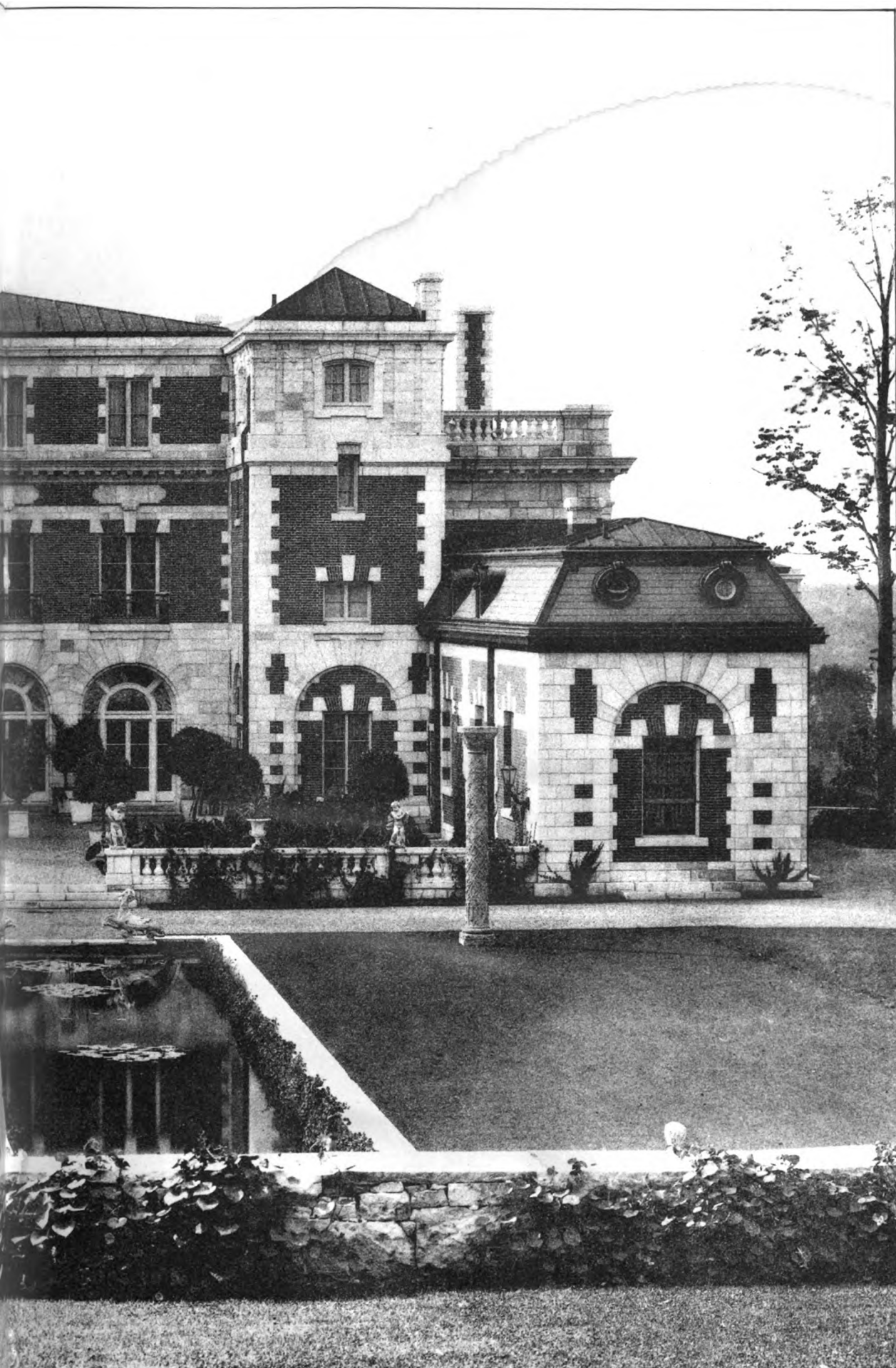
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NOVEMBER 25, 1899.



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EVERY architect will be interested in the decision of the American Institute of Architects to require candidates for admission to its ranks, after January, 1901, to pass an examination. The Royal Institute of British Architects adopted this course some years ago, amid loud predictions of evil consequences, but has since prospered satisfactorily, while membership in it has become more than ever a guarantee of professional skill and ability. There is no reason why the examination of candidates should not have similar results in this country. In fact, the American public has for several years even demanded some sort of test by which capable architects could be distinguished from incapable ones, and the licensing statutes now in force in several States have been the result of this popular feeling. While the license statutes have been undoubtedly beneficial, they have put serious obstacles in the way of the employment of architects out of their own States, and the successful passage of the test for membership in the Institute would give all the guarantees to the public that are afforded by the license laws, much more conveniently for the architect, and, practically, without expense, since membership in the Institute is, simply as a business investment, well worth the trifling dues that it involves.

THE armed expedition sent by the Mexican Government against the rebellious Mayas is likely to result in opening to science a most interesting country. Without committing ourselves to any opinion on the correctness of the theories which find in Yucatan the birthplace and favorite residence of Osiris, and trace an intimate connection between the Mayas and the ancient Egyptians, or which identify the Maya hieroglyphics with early Chinese writing, it is, at least, certain that the peninsula presents some very curious problems in archaeology and ethnology, the solution of which may throw light on the history of the old as well as the new world. In general, the ancient Maya civilization seems to have been essentially similar to that of Mexico, as it was found by the Spanish conquerors, but more highly developed. Whether this signifies that the Mayas had been longest in possession of their knowledge, and had imparted it to the ruder tribes around them, or whether the seeds of civilization, received by them through the Aztecs, had found among them a congenial soil, no one can now say. Both races still preserve legends of the arrival of strangers, bringing the rudiments of art and letters to their brutish ancestors, but whether these strangers were Egyptians or Chinese, or whether there were really any strangers at all, remains to be ascertained. While the Mayas are being disciplined into

submission, it is to be hoped that the race of dwarfs, which shares the country with them, will be tenderly treated. These gentle and timid little people, perhaps the most interesting, as well as the least known, race on the continent, must have a history of their own, and seem to have had also a tolerably well-developed art. One explorer tells a story of having seen the ruins of a city of the dwarfs, containing, among other things, what seemed to be a stone triumphal arch. Such a construction as this would indicate high æsthetic development, and the great dissimilarity of physical and mental character between the dwarfs and any other known American race makes the history of the former all the more interesting.

A REMARKABLE experiment, of which we await with interest the particulars, is reported by telegraph from Paris. Two members of the Automobile Club are said to have started in a cigar-shaped balloon from a place near Paris, and to have sailed in a circle around the Eiffel Tower, returning then to the place from which they started. The balloon is reported to have been propelled by a naphtha engine, and to have been so easily controlled that one of its owners has made a bet that he can use the roof of the Automobile Club, on the Place de la Concorde, for a landing-place. With all due allowance for newspaper exaggeration, this seems to have been the most successful attempt yet made at navigating the air. The famous military balloon of Renard and Krebs could manoeuvre only in very calm weather, and it was far from being able to sail safely in a circle around an iron tower, and nothing else that we know of has even approached the achievement of these two young officers.

IT is a little strange that the Americans, the richest, and most ingenious and enterprising, of all the people of the world, should let foreigners outstrip them in the art of navigating the air, an art which will surely occupy a large share of the attention of the world in the next century. It is only a few months since two amateurs from England crossed the Channel safely in a balloon, and the German and Russian army engineers, who are permanently detailed to study the matter, have not been idle, although the public is kept, as far as possible, in ignorance of what they accomplish. The great difficulty in this country seems to be that every one is too busy to devote himself to the matter, or, if he is not busy, has no money to invest in it, and the Government does nothing, although a moment's consideration will show that the sum spent out of the public treasury in one day for military purposes, including pensions, would, in all probability, be enough to solve the problem completely, with credit to the American name greater than could be gained by assaults on all the weaker nations in the world put together. Moreover, it ought not to be forgotten, in considering the propriety of Government aid to the new art of navigating the air, that wars, and with them most of the expenditure for military and naval establishments throughout the world, will cease from the day that a balloon, capable of carrying a load of a ton or two, is successfully navigated in moderate weather over a course of a few miles, for the reason that any community, except one of absolute barbarians, will then have the means of dropping boxes of explosive gelatine, or lyddite, or other deleterious substances, upon hostile vessels, or among invading armies, before the arrival of either upon the scene of their intended activity, and even of destroying in a single night the capital city of any other country which fails in its duty of international politeness. To brave this terrific means of destruction, which will be available for the smallest nations as well as the largest, would be such madness that no one, after the first experiment, would dream of it, and, just as gunpowder put an end to the beneficent rule of the nobility over the serfs, the navigable balloon will surely terminate all attempts to spread the Gospel, or Anglo-Saxon civilization, or trade, or anything else, at the point of the bayonet among communities that do not want it, and the strenuous life will, apparently, be obliged to content itself with private, rather than public, adventures against other people's property.

IT is gratifying to learn that a building which is "destined to be the glory of New York and the pride of the United States" has been designed by Mr. Post, for a site at present indefinite, but intended to be in the neighborhood of the Riverside Drive. This remarkable structure is to be of "marble

and gray granite," and its ground-plan is to be "that of a cross superimposed on a circle." The circular part is to be eight hundred feet in diameter, and contains some "concentric circular galleries," which "hold a width of one hundred and twenty-five feet." These concentric circular galleries are "diametrically intersected" by "four wings at right angles to each other, each eight hundred feet long, two hundred feet wide, and thirty-five feet high." A dome is shown in the published sketches over the centre of the building, which would presumably have the same diameter as the width of the intersecting wings, so that we have a total length and breadth of eighteen hundred feet, or nearly eight city blocks each way, for this somewhat ambitious composition. The four wings are, we are told, to be named respectively the "Hall of Literature," the "Hall of Religion," the "Donors' Hall," and the "Hall of Gifts," and it is difficult, in view of the choice of the last two appellations, to avoid a suspicion that the cash for the purchase of the land and the erection of the building is not all at present in hand, and that New York may perhaps have to wait for its "pride" until a sufficient number of "donors" have interested themselves in the enterprise.

THE Philadelphia *Record* has a description, which may, we imagine, be taken with some reserve, of a building which is said to be in course of erection in the Exposition grounds in Paris, representing a country-house, or rather, a mediæval château, inverted, so that it stands on the tops of its towers, its roof hanging between, just off the ground, while its front door is in the air. Entrance is obtained through a hole in one of the towers, and the visitor ascends thence through the bedrooms to the drawing-rooms, ending his journey at the front door at the summit, from which he can look out, as we are informed, on "a terraced garden hanging in the air." Except for the inverted garden, there is nothing very impracticable about the building as so far described, but the *Record* adds some details which seem to have been supplied by the distinguished Baron Munchausen. For example, we are told that the visitor after ascending a "chimney" to the bath-room, will find a marble tub "suspended over his head," and supplied by a "steaming jet of hot water spouting upward" into it. What is done with the overflow is not mentioned, but such trifles would hardly present any difficulty to the talented designer of an inverted bath-tub holding water suspended in it. Leaving this uncomfortable place, and climbing to the drawing-room, the stranger may, as we are informed, "listen to the strains of 'La Tzigane,' or the latest tune from the Folies-Bergères, played on the piano by some gay Parisienne, head downwards." This illusion could, of course, be managed by means of mirrors, but a moral, rather than a physical, explanation seems to be requisite for the assertion that "on looking through the windows into the grounds of the Exhibition, the latter will appear to the observer in an inverted position, at the same time conveying to himself the strange idea, shared, moreover, by the people outside, that he is, in truth, standing head downwards." The inventor of this structure, which is known as the "Manoir à l'Envers," is said to be M. Kotin, a Russian engineer, who is probably not responsible for the newspaper descriptions of it.

THE tunnel through the Simplon Mountain, which is to connect the French and Italian railway systems, is rapidly advancing. Provision has been made for two parallel tunnels, but only one is now in process of construction. This is being excavated from both ends, water-power being used in each case to drive the drilling-machines, which are of the Brandt type, already used for many other tunnels. The machines have, however, been much improved of late. The drills, instead of being hollow, have now only a small perforation, for carrying water for cooling and washing into the drill-hole. In this way the time formerly used in taking out the drills and clearing the bore is saved, as the water-tube is too small to admit the stone chips. From eight to twelve holes are drilled at once, to a depth of five or six feet, and the rock then removed by blasting. Explosive gelatine, made with ninety-two per cent of nitroglycerine and eight per cent of gun-cotton, is used for this purpose, and it is the practice to fire two or three charges first, to loosen the rock, and then to fire the rest. Many experiments have been made, using mixtures of charcoal, petroleum and other combustible substances with liquid air, as explosives, but no satisfactory results have yet been obtained; and Professor Linde, under whose charge the experiments have

been made, considers that liquid air is too uncertain in its action to be utilized with good results in engineering work. Operations at the tunnel began exactly a year ago, and the contract requires its completion in five years from the time of beginning. About two miles have already been excavated, and the work is now going on at the rate of nearly forty feet a day, so that the total length, of about eleven miles, ought easily to be completed within the contract time.

WE would like to call the attention of owners of steam-boilers, architects, builders and owners generally to what, judging from the claims made for it, is the most remarkable fuel yet discovered. The ingredients do not seem to be particularly difficult to obtain, consisting, as we are told, of ninety-three per cent of "pit coal-dust," and seven per cent of a mixture of "Stockholm tar and caustic lime"; but either the Stockholm tar or the caustic lime, or the mixture of the two, must impart to the compound strange chemical qualities, for we are informed that, when pressed into briquettes, the new fuel burns like "an extraordinary brilliant coke fire with tongues of white and blue flames." That "the heat produced is intense" may well be believed, after learning that "a test made produced the effect of the evaporation of fourteen pounds of water to one pound of the coal." As the theoretical evaporation from the boiling-point, with the purest anthracite coal, is only fourteen and four-tenths pounds of water to the pound of coal, and as the average evaporation, with English coal, is less than nine pounds of water to the pound of coal, in the best boilers, it is, to say the least, difficult to believe that the mixing of a little tar and lime with it would add more than one-half to its efficiency, particularly as the dust-coal, which contains more or less fine *débris*, is usually inferior in efficiency, weight for weight, to the more salable products of the mine. Another assertion which casts a doubt on the whole description of the new fuel is the ridiculous one that "the ashes do not exceed three per cent." As coal itself contains, on an average, at least ten per cent of ash, while dust-coal contains still more, and as the addition of caustic lime would increase the ash by an amount equal to that of the lime, it is obvious that the ash, instead of three per cent, must be from ten to fifteen per cent. If any less proportion of ash is found under the grate, the inference can only be that the remainder has been scattered over the room in the form of dust.

THAT it is desirable to utilize coal-dust for domestic and industrial use, by cementing it into blocks, capable of easy handling, which will not melt in the fire, and will be of such shape as to allow air to pass between them, has been understood for a century at least, and for many years such blocks have been made and used on the Continent, both in boiler furnaces and in domestic fireplaces, with satisfactory results. In all these blocks, as we believe, tar is used, and in most of them, we think, lime also, so that the composition described is very far from new. As coals vary greatly, however, in their structure and behavior, it is found that a cementing addition which will do for one sort will not answer for another, and it is quite possible that some unusual success may have been met with recently in adjusting the proportions of lime and cement to certain English coals. If so, it may be hoped that similar success will attend, before long, the experiments which have for several years been in progress with American coals; for there are many evidences that the days of cheap coal are over for the present, even in the Eastern States, while in California, and some parts of the West, an economical substitute for soft coal would bring relief to the purse of many an anxious householder.

ONE of the most interesting exhibits in the United States section at the Paris Exposition is to be a typical American machine-shop, with all the labor-saving appliances so familiar in this country, and so little known anywhere else. Space has been allotted in the Exposition grounds for a building three hundred and forty-three feet long, and seventy-four feet wide, for this purpose, and the building itself, as well as its fittings and furnishings, will represent American materials and methods, the frame having already been shipped from the works of the Berlin Bridge Company. A large part, if not the whole, of the structure is to be devoted to iron and wood-working machinery, but it is said that a complete American shoe-factory is to be shown in operation at the Exposition, and this may possibly find accommodation in the building.

THE THIRTY-THIRD CONVENTION, A. I. A.

AN annual meeting of the American Institute of Architects without the usual Donnybrook-Fair attachment, that is, without the seemingly-perennial discussion of the constitution and by-laws, that needless oiling of very rarely used machinery that always has caused such a fatuous flow of words, such needless and unmeaning quibbling, such uncoverings of the naked egoism of the disputants—and how very, very naked it has often been seen to be!—must seem a hardly credible phenomenon to many a regular attendant at these annual gatherings who by an untoward chance happened not to be in Pittsburgh last week. The proceedings this year took on a gratefully unfamiliar air which seemed to be relished by all, even by the most active-tongued debaters of amendment and exception; but whether the relish was due to the mere novelty of the situation and would be less apparent at a similar meeting another year, or whether it was because they enjoyed the sensation of the discovery that the ear was quite as mighty an instrument of education as the tongue, could not be determined by the onlooker, and the question must be left to be solved by the aid of future evidence. But with no by-laws to debate and very little in the nature of general business brought before the meeting, there was very little for the official stenographer to do, so he went comfortably to sleep, while the reporters for the daily papers, finding that there was nothing exciting to be worked up for morning or evening editions, transferred their attention to the larger convention of hardware men that was being held in the same building on the same day. It happens, by the way, that the only things in the nature of *contretemps* can be laid at the door of these same hardware men. In the first place, their large numbers caused all the hotels to be more than full, not only the Monongahela House, which promised to take in the architects and kept its word in a very sinister sense, but all others in the city; the consequence being that most of the architects had to go to two or three hotels before room or bed or cot could be found. But the worst fate seemed to fall upon some of the extra-professional guests of the Institute who had been invited to read papers. One of them had to be escorted to seven hotels before he could be housed, while another was finally disposed of in a Turkish bath and reported next day that even then one of his two towels had been filched by some other sufferer a little short in bed-clothing.

But the greatest injury inflicted by the hardware men was their rape of the meeting-room which the Institute had engaged, but which the hotel-keepers unblushingly deprived it of rather than lose the custom of the larger body of men. The result was that the architects were forced to hold their meetings in the hotel billiard-room, dirty, dark and above all noisy, for being on the ground-floor, with many windows on the street, each wagon that clattered by completely drowned the speaker's voice for a term and in a degree that varied with the nature of the load and the rate of locomotion.

But in spite of these drawbacks, and although there was less than the usual chance for each attendant to become a performer and secure the meed of applause that his particular clique of admirers has always been ready to shower upon him, there has never been a convention that so held together during the three days of its session as has this. There was hardly any variation in the number in the room between one session and another and comparatively few men straggled away after the first day, either returning to their own homes or finding for themselves other occupations and amusements in the city. All realized that a change had come about and explained it according to their several predilections. Those who had never felt that squabbling over by-laws which were never used was the end and aim of the Institute's being, but that its proper function was the discussion and digestion of serious papers, rubbed their hands with an I-told-you-so air and were satisfied that the cause of the change was to be found here. Others who long have advocated the delegate system felt the change was due to the fact that this year the delegate system was in operation at last. These men felt that, even if it could not be alleged that the delegates were of a higher or different type of member from those who had attended voluntarily in the past, they yet had come with the feeling that they represented their several Chapters, that they had had a duty imposed on them, and that they must, like honorable and dutiful beings, perform that duty and sit things out. Then, too, the local Chapter, of course, felt that the change was due to the nature of the programme for entertainment they had prepared and the great shrewdness with which it had been mapped out, so that the reward for duty performed followed immediately upon the performance of that duty. Lastly, we feel that sheer curiosity had something to do with the matter and that a goodly number came very largely and only to learn whether the new order of things was likely to be more to their taste than the old. To judge by expressions of opinion heard from many men of many minds, their natural feeling of curiosity has been affirmatively satisfied. But as to the other matters, a single trial does not afford data enough for a trustworthy solution.

As for the papers, the reading and discussion of which formed the backbone of the Convention's proceedings, it seems hardly worth while to speak further than to say that, while some were very good and others were rather indifferent in value and interest, the average of quality was far above the average of previous performances of the kind at these meetings. As there was practically little business discussed on the floor, the editing of the *Proceedings* will take less time than usual and the published report will be in the hands of members

much earlier than usual. Moreover, we shall, as usual, publish a number of these papers, even in advance of their appearance in the *Proceedings*, and a discussion of their good or bad points seems hardly needed. As to our practice of publishing the Institute's papers, we have always felt some misgivings: it seems so to forestall and almost make unnecessary their publication in the *Proceedings*, and at all events it certainly dulls the edge of interest in that publication so far as the Institute's own members go. But the officials of that body feel that our course is far from mischievous, since it brings to bear upon others than its own membership those educational utterances which it is an important part of its functions to promulgate and for which it seeks the widest publicity.

If, however, it were worth while to discuss these papers, we should be tempted to begin by taking issues with some of Mr. Brockway's statements and inferences, though we realize that not only practices but principles have changed at the *École des Beaux-Arts* in the last twenty years. We will say, however, that we think that he belittled his argument by following the politician's method in matters of dispute and "claiming everything in sight." Mr. Andrews's brief comment on the paper on the "Influence of French Art, etc.,"—which, by the way, was almost the only contribution which could properly be defined as *discussing* the matter before the meeting—was particularly pat, and was skilfully diverted into a little dissertation showing how futile is this striving after a "distinctively American style" which regularly obsesses each generation of young architects, who, in the delights of emancipation from directed studies, seem fatally drawn to this matter as the first of the Herculean labors they must overcome. Like many another, Mr. Andrews believes that an American style, sufficiently distinctive, already exists, and that it exists as much as anything through the negation of accepted styles in work executed according to the acknowledged rules of those styles. For, just as the accomplished citizen of one locality is known by the style of that locality when first he sets out on his travels, yet, after having imitatively and unconsciously adopted one after the other the distinctive styles of the several countries he sojourned in, each negating in some particular the distinctive characteristics of some earlier acquirement, when at length he returns home after a long absence a thorough cosmopolitan, with no distinctive style belonging to him while yet distinctly having style, so American architecture is becoming distinctly a thing which has, not a "distinctive American style" but purely and simply style.

In this matter of the discussion of the papers, we feel that the method adopted at this Convention was hardly a success. It was proper enough for the men who were invited to discuss the papers to send in formally prepared papers when, as Mr. Elzner did, they found they could not attend the Convention in person. Moreover, Mr. Elzner's paper was a distinct and proper contribution to the discussion as he took exception to Mr. Garney's thesis and joined issue with him over it. But for those invited to take part in a discussion to, one after the other, each draw from his pocket an essay on the main subject—for, as a rule, the references to the paper under discussion were extremely tenuous—was rather dreary, and turned what was expected to be one of the most enlivening features of the occasion into really the least satisfactory one, since to the audience a full half of the enjoyment of a discussion lies in the evidence it gives of the intellectual readiness of those who, without warning, speak on the subject, either in support of or in contradiction of the fundamental statements contained in the paper so discussed.

Short as was the actual business transacted by the Convention, and confined as its efforts were to two or three heads, there was never a meeting of the Institute that accomplished so much that was worth the doing.

Acting, we believe, quite without concert on the part of those who advanced the recommendations, the attention of the members was kept directed toward the important matter of professional education, first by Mr. Van Brunt's suggestions in the Annual Address; next by Mr. Gibson's report for the Committee on Foreign Correspondence, which was confined entirely to explaining how the examination system actually worked in the Royal Institute of British Architects; next, and most naturally, by the report of the Committee on Education itself, and finally by Professor Ware's delicately humorous after-dinner remarks at the closing banquet.

The acceptance of the report of the Committee on Education and the instant and unanimous adoption of its two important and wholly unexpected recommendations was easily the most important piece of business ever transacted by the Institute. The suggestion that a conference, by committee, between the Institute and the newly-formed Architectural League of America (the association of student clubs) with a view to determining how far it may be possible for the latter to assume toward the Institute the same functions performed by the Architectural Association toward the Royal Institute of British Architects, was so natural and so obviously wise that opposition would have been almost impossible. But that the second suggestion should also have met instant and unanimous adoption was really remarkable. As a consequence, the Institute is now pledged to the examination system as the only means by which it will allow itself to recruit new blood—after January 1, 1905. The step now taken was not presented as a novelty: it has often been discussed, and we ourselves have often urged it as the wisest step the Institute could take. But until now it has always met with opposition from the floor, and has been discountenanced by such overwhelming votes that those who have brought into being the new delegate

system are disposed to maintain that the adoption of the examination system is the first fruit of delegate action, and could not have been plucked through any other agency. This is as may be; but the fruit has been ripening for some time past and possibly it might have dropped from the bough this year at any rate.

The recommendation was obviously fair and the next five years are none too much within which to draw into the Institute those desirable members who need not be subjected to the annoyances of examination. These men—and, as the Institute numbers a scant ten per cent of practising architects at present in this country, there should be a good many of them—can enter the Institute under the existing laws, and, as after 1905 membership will “mean” more than it does now, probably many desirable additions to the membership-roll will be made during these next five years. But in view of the change of procedure now announced, the Institute wisely reserves to its Board of Directors the right, during this premonitory period, to require those of whose attainments they may entertain misgivings to undergo examination. After 1905, then, applicants for admission to the Institute, beside adducing the usual evidences of honorable and capable practice during the required number of years, must either produce the diploma of graduation at a recognized school of architecture, or must pass such examination as may be prescribed. This pronouncement does more for the Institute and more for the profession at large than anything the Institute has done in its career of thirty-three years, and it largely makes unnecessary any further agitation of the matter of the licensing of architects in accordance with statute requirements.

Next in positive importance to these suggestions of the Committee on Education was Professor Ware's paper on Competitions, a subject upon which his long and large acquaintance with their workings better qualifies him to speak than any man in the profession. This paper was not only very long but very exhaustive and presented the subject from points of view very generally neglected by practising architects smarting under the acknowledged evils of the system. If in place of being the very last number on the programme this paper had chanced to be the first, it contained so much of suggestion that the discussion of the points raised would have left no time for other business. The reasonableness of the deductions advanced by Professor Ware was evidenced by the fact that, on Mr. Stone's motion, the Board of Directors was instructed to suspend the issue of a competition code, which was at that moment in the hands of the printers, so that the whole matter might be reconsidered in the light of the arguments just presented.

As Mr. Van Brunt in his address announced that his impending lengthy trip abroad would prevent his accepting the customary reelection, it became necessary to elect a full new ticket and the polling of the vote showed the election of Mr. R. S. Peabody, of Boston, as *President*; Mr. W. S. Eames, of St. Louis, as *First Vice-President*; Mr. Frank Miles Day, of Philadelphia, as *Second Vice-President*; Mr. Glenn Brown, of Washington, as *Secretary and Treasurer*; while the three vacancies in the Directorate were filled by Mr. Henry Van Brunt, of Kansas City; Mr. James G. Hill, of Washington; and Mr. Norman S. Patton, of Chicago. A final excellent determination was that next year and on alternate years thereafter, the Convention shall be held in Washington.

THE PRESIDENT'S ADDRESS, CONVENTION OF 1899¹

IT is my province and my privilege to welcome you to this Thirty-third Annual Convention of the American Institute of Architects, to congratulate you on the national prosperity and progress which it is your high function to symbolize in works of architecture; to refer briefly to the main incidents in the history of American architecture during the past year; and more especially, to point out how the work which we are organized to perform may be more effectually carried out and how the beneficent influence of the Institute may be more widely extended.

If architecture during the past year has made a sufficiently definite advance in structural ingenuity or artistic beauty and fitness to be noted in the official review which it is my duty to lay before you—if in this interval it has earned and is receiving from the public and the nation a more intelligent and appreciative recognition as a fine art, we may justly attribute these results to two causes: first, to the American Institute of Architects, through the cordial affiliations of its members and its organized and persistent efforts during the more than fifty years of its existence; and, second, to the schools of architecture, which are now considered so essential to the generous culture of the youth of our country that they form a part of the systems of technical instruction in many of the principal institutions of learning in the United States. The splendid hospitality of the Ecole des Beaux-Arts is no longer essential to the complete equipment of the American architects. During the past year the results of the special training obtained in our own schools have become very evident. The graduates are beginning to make good their place in the ranks of the profession, and the older members find that they are stimulated by a fine emulation of new blood and fresh inspiration. Almost daily new names become prominent, and new reputations are beginning to struggle with old for preëminence. The impulse of this new and healthy dispensation is already felt in the remotest parts of

the country, and the vulgar architectural vernacular which has there prevailed is giving place to coherent and disciplined style.

The Institute should take immediate measures to refresh itself from this influx of new and abounding life. It is most evident that these two powerful influences, the Institute and the schools, which are thus working for the advancement of architecture, should work, not apart in rivalry, but together, in closer and more effective coöperation than heretofore.

To this end, I venture to suggest that, by a single amendment of the By-laws, the Committee on Education should include, *ex-officio*, all those professors and instructors of the architectural schools who are members of the Institute, and, if there are any who are not members, that they should be brought within our fold, so that this committee may act not only as a bond of union between the Institute and the schools, but between the schools themselves; that the annual report of the committee should embrace a general statement of the work and methods of the schools, the number of pupils enrolled, and the names of those especially distinguished; and that the practical interest of the Institute in the welfare of the students should be made evident to them by the establishment of a system of Institute prizes, and, if possible, of one or more travelling-scholarships, open to the students of all the schools.

There are nearly five thousand persons practising as architects in this country, and it cannot be denied that the professional practice and standing of this large body of men is made more secure, more honorable, more respected and more remunerative by the fact that one-tenth of their number is organized and united in a national Institute, which for many years has labored successfully to promote the artistic, scientific and practical efficiency of the profession. It is true that the influence of the Institute is in proportion rather to the wisdom than the number of its members. It is no less true that the Institute is organized for a far larger and a far more widely distributed membership than it at present enjoys, and that, until it has such a national membership, it cannot have its full and proper effect as an instrument for the advancement of our profession, and cannot adequately represent its dignity before the world.

The question how our strength and resources can be best enlarged is, therefore, of the first importance. The men whom the Institute most needs are the men who most need the Institute. A late earnest appeal to the Chapters has in several localities been fruitful in securing many valuable members, as will be explained in the report of the Board of Directors. The Kansas City Chapter has been rehabilitated and will be restored to full affiliation with the Institute under the new By-laws. But the strengthening of the Institute requires measures much more far-reaching. We need new chapters in every part of our wide domain, and, within them, more members, and a much more active and efficient adjustment of their machinery to the needs of young men. No effort should be spared by the chapters to make their meetings so attractive and so essential to the younger men that the necessity for the existence of junior societies and leagues in their neighborhood would be less apparent, and there should be no occasion for rivalry. The Institute should be especially hospitable to the graduates of the schools, and I am persuaded that, if the connection between the schools and the Institute should be established on some such basis of mutual interest as has been outlined, the professors would prove the most effective recruiting agents, and that their pupils on graduation would be made to consider that junior membership in a Chapter of the Institute is essential to their proper and regular advancement in the profession and a necessary preliminary step in their career as architects. The Institute should not only be the guardian of professional purity and dignity in practice, should not only advance the interests of our art and act as the fountain of professional honor, but should aim to secure a more effective unity of effort between old and young, so as to inspire our work with the strenuous spirit of our national life, and in this service to make our art distinctively stronger, truer, and more beautiful. Therefore the Institute needs in its membership, not only the wisdom of age and experience, but the enthusiasm and zeal of youth if it would keep in closer touch with the most healthy aspirations of the profession and avoid becoming the slave of its own traditions. To this end the junior members of the Chapters, recruited from draughtsmen and graduates of the schools, should be made to feel that they are wards of the Institute and essential parts of its organization, and to anticipate their advancement in due time to the successive grades of Associate membership and full Fellowship as assurances of honorable professional positions before the world. It seems to me that the Institute, under its present improved organization, would, by some such process as I have suggested, be brought into closer and more effective sympathy with the young men just entering the profession, and through such sympathy, would receive at least as many benefits and advantages as it would confer.

I commend these propositions to your careful consideration, and would further propose that the Board of Directors be requested to examine into the work and methods of the most successful of the junior architectural societies or leagues with the object of formulating from their experience a scheme of exercises and duties to be recommended in a circular to the Chapters, so that they may learn how to give greater interest and a more abundant life to their proceedings, and become more active and efficient agents in the practical work which this Institute is organized to perform. Thus may be established a propaganda in the interests of a warmer comradeship, a purer practice, and a nobler art.

¹ Annual address delivered at the Thirty-third Annual Convention of the American Institute of Architects held at Pittsburgh, Pa., November 14, 1899, by Mr. Henry Van Brunt, President.

In considering what has been actually accomplished by our efforts during the past year, it is with especial pleasure that I refer to the fact that, under the operations of the Tarsney Act, public buildings at Norfolk, Va., Camden, N. J., and Ellis Island, New York City, are now erecting from the designs and under the care of private architects; that the new Custom-house in New York and the Judiciary Building in Washington have, after fair competition, been assigned to architects capable of expressing the genius of the nation in monumental architecture; and that the Baltimore Custom-house and the National Building at Cleveland, O., will probably soon be the subjects of competitive design. The work on the buildings for the Naval Academy at Annapolis and on the Government Building at Chicago is in the hands of private architects. It is probable that other public monuments, especially in the West, will be open to the profession as soon as the sites shall have been vested in the United States. The office of the Supervising Architect at Washington is thus gratefully relieved from a labor which no individual genius, however strong, and no official organization, however skilful, can be sufficient adequately to perform. But while the efforts of the Institute have thus far succeeded in opening to fair and honorable competition the designing and building of the national monuments, and have made an encouraging beginning in rendering them more worthy to represent our higher civilization in terms of art, it must not be forgotten that these opportunities have been opened to us only through the intelligent sympathy of the present honorable Secretary of the Treasury, operating under the provisions of the Tarsney Act; and that, without the accident of this intelligent and exceptional sympathy on the part of that official, the public buildings of our country would still be manufactured by the architectural machine in the Treasury Department, with its subdivided professional responsibilities, its baleful political affiliations, and its deliberate and extravagant methods of administration. Our attempt to formulate and obtain the enactment of a law sufficient to secure for us a truly national architecture fit to represent our highest standards in art, should not for a moment be relaxed, and our legislative committee on Government architecture should be continued, maintained, and encouraged to use every honorable means to bring about this result at the earliest possible day.

I am glad to bear witness to the fact that, in the conduct of competitions in general, the dignity and the highest interests of our profession have, during the past year, received more adequate and respectful consideration than heretofore. But it must be admitted that in many parts of our country, especially in those more remote from the great centres of activity and intelligence, the loose professional habits of many practitioners of our art still encourage the publication of "Invitations to Architects," while, competitions in which the contestants are arbitrarily deprived of every proper safeguard, and are asked to submit themselves to conditions insulting to their self-respect and devised to secure their service at the smallest possible cost, meet with ready and humiliating acceptance. Near every such locality the Institute should maintain a missionary chapter to teach the primary principles of honorable practice, for the benefit, not of the architects alone, but of the public.

Among the competitions of the year which have been managed in a manner creditable to the projectors, the contestants, and the judges, by far the most conspicuous and memorable is that for the laying out of the buildings and grounds of the University of California, under the "Phoebe Hearst Architectural Plan." Though the highest award in this international competition fell to a French architect, the brilliant part borne especially by some of the younger American contestants is a cause for congratulation. I should like to see this Institute, by formal resolution, recognize our indebtedness not only to the munificent and public-spirited woman through whom this important architectural event was made possible, but to the managing committee for furnishing an example so conspicuous of a fairly-conducted competition on a great scale, and for the courage and intelligence with which they have conceived a scheme of architecture which in extent and importance has not been exceeded, if it has been equalled, in modern times.

Another cause for congratulation resides in the cordial and effective alliance between painting, sculpture, and architecture as exhibited in several works of monumental importance which have reached completion during the past year. It is only by such harmonious and fruitful coöperation that the highest civilization of our times may at length begin to receive competent expression in art. The public is beginning to understand that the highest and noblest expressions of art, not only in permanent monuments, but in public pageants of merely temporary significance, are possible only through such a concert of effort, and architecture is glad to restore to her sisters of the brush and chisel the field of high endeavor in which the old masters found their greatest opportunities. We especially recognize and admire the splendid service rendered by the sculptors in the decoration of the triumphal arch erected in New York in honor of the Navy and the victor of Manila.

I have looked forward, gentlemen of the Institute, with especial solicitude and interest to this, your Thirty-third Convention, as it is the first in which, under our finally amended laws, the experiment of authorized delegations from the Chapters is to be tried; the first in which the remodelling of the Constitution and By-laws has not presented itself as the paramount and absorbing topic of report and discussion; and practically the first in which the Institute has given to it the privilege and opportunity of considering at peace and with-

out fear of interruption subjects related to the highest interests of the profession.

If, after those many years of experiment, we have at length reached an era of tranquil and prosperous development, let us realize that the best use we can make of this peace is to comprehend and to assume all the grave responsibilities which belong to the undisputed position of the Institute as the national representative and protector of a great profession and a greater art.

You may be sure that the civilized world will receive with peculiar interest all that we have to give forth in the elucidations of the strange and unprecedented conditions under which a rich and prosperous nation, unembarrassed by patriotic traditions of art, is developing style; that it will eagerly hear all that we may have to say on the practical applications of science to architecture, on the progress of invention in respect to building, on the discovery of new materials and new methods and their effect upon our art, and on the incidents of our unimaginable progress in the future. We alone are in position to influence the expression of the immense energies of our nation in architecture. Let us endeavor adequately to fulfil these duties.

I hope I may be permitted to close the address with a brief personal statement. When at the last Convention you saw fit to make me President of the Institute, I received the unexpected honor as an expression of consideration and respect for one whose connection with the Institute began at its first conception, forty-seven years ago. Recalling the brilliant services of my old friends and predecessors in this office, I undertook its responsibilities with doubt and sincere misgivings. But as the culmination of a professional year is now, in the course of nature, drawing towards its close, and as a more precious testimonial of the good will and kindly feeling of my professional fellows, the honor was very grateful to me, and I now resign it with a deep appreciation of your generous confidence. If, possibly, it may be the purpose of my friends to propose my name for an election to a second term, as permitted by the By-laws and as customary in your practice, I must with gratitude, decline the compliment, as I have in contemplation a long visit of study and observation in Europe.

I sincerely trust that in choosing my successor, you may be wisely guided and that he will receive the office with the consciousness that its responsibilities have increased, and are increasing with time, and that a merely perfunctory administration of it will delay the development of the great future of the Institute.

THE INFLUENCE OF THE FRENCH SCHOOL OF DESIGN UPON ARCHITECTURE IN AMERICA.¹

THERE are two interpretations of the subject of this paper that at once suggest themselves to the mind. Of these two, I will endeavor to discuss in detail those manifestations resulting from the influence of the French School of Fine-Arts at Paris, or l'École des Beaux-Arts, upon our architecture. If there be any doubt in the popular and professional mind as to the character or nature of the influence of the "French School" as a general term, it probably relates more to the École than to that historical French school as distinguished from the Italian school or German school. Of the nature of the influence from this source, there would seem to be little room for doubt, as so much of our work which is of merit and interest is drawn largely from that source, and barring the dismal period of the Mansard roof applied to frame-houses in suburban and city outskirts work, is genuinely valuable as a source of inspiration and in its influence. In addition, there are many of us who think there is no doubt as to the nature of the influence of the École, and having this belief, and with the desire to have this belief become general, I have undertaken to write these few pages.

Given "an influence," the questions arise, How is it manifested? Are the results good or bad? In this case the influence is exerted through the work of (1) French architects in active practice—many of them "patrons" in the École, (2) through the work of the Frenchmen in the school, (3) and through the training and work of Americans who have studied at the École. The first two media are important, but it is really as to the value of the third that we, as a people, are vitally interested. If the influence be a good one, we want it, and therefore we want our young architects to study at Paris in the École. This, then, is the proposition, which follows logically from any demonstration that the influence of the École is a broad, noble, artistic, healthy, and good one, viz., the training of American architects at the École des Beaux-Arts is a thing to be very much desired in every sense of the word and most unqualifiedly. I shall therefore endeavor to demonstrate that the influence of the École is broad, noble, artistic, healthy, and good; that, having these qualities, it is most important and vital to us. The fact that American work shows in a markedly increasing amount the impress of this influence is in itself a thing in favor of my demonstration. I have endeavored to approach the subject with a mind and heart open to learn as near the truth as can be, from whatever source, and with the desire to see whatever there is of good in every cult, and to scan the entire horizon fairly, rather than to accumulate only one line of data to prove a point that has been assumed beforehand.

¹ A paper by Mr. A. L. Brookway, of New York, read at the Thirty-third Annual Convention of the American Institute of Architects at Pittsburgh, November 14, 1899.

The effect of any thought, any idea, any system of ideas, of any resulting system of training to inculcate ideas, is manifested in various ways and degrees of merit according to the character of the mental, moral, and spiritual development of the individual. Consequently, we see many results which those who are opposed to the training at Paris point as showing that this training is fruitful in *bad* results and influence. It is almost unnecessary to remind you that there never has been a time in any line of art, science, or industry when such was not the case. It proves nothing against, nor for, any school. It simply demonstrates the infinite variety of the human make-up. We do not purpose, however, to disregard even these so-called harmful results. We hope to prove that the influence of this training is good, and not bad. Now, to show these good results, let us consider the exact nature of the training at Paris, and then the character and nature of conditions here, at home, in America, in order that we may come to a just conclusion. Before doing this, however, there is another thing to consider. Many will say, "but if we can give as good or the same training here in America," why is not that better? Some day it may be as good. We all hope it will be. That is what we are striving for, and that is why we say now, Go to Paris. But even at the period of "some day" I think we will still say, Go to X. That raises the much-mooted question of our political life, "America for the Americans," and the endeavor to put our art life upon the same plane and to prove that an American training alone is the thing for American art. That is as unsound in art as it is ethnologically and in politics. The Chinese wall of exclusion is getting badly worn out. We can draw in unstinted measure from universal history and from the countless manifestations of nature to prove not only that that is an unsound, unhealthy, and false attitude, but that the obverse proposition is founded upon the truest principles of art and nature, and has been and is productive of the greatest and most invaluable results. To state it briefly, we should not, from any sense of national pride, object to going outside to be trained to study, to acquire ideas and experience, to develop. For instance, begin with the earliest of architectural creations and follow chronologically through history and note the constant interchange of forms and the persistence of some forms, the borrowing of ideas, and the developments frequently of the borrowed ideas into still more beautiful and refined forms; in fact, re-creation. What of the Greeks did get the idea of their anthemion or honeysuckle ornament from Assyria. That did not prevent their practically re-creating it into the exquisite form that we know it to-day. What if the prototype of the Doric column is found at Beni-Hassan, in Egypt, and the idea more or less borrowed? That does not account for the slow development of the Doric order and final sensitive and refined proportions of the columns of the Parthenon. And the Romans! Borrowing here and there ideas and forms, what do they create out of them? A line of structures of far more kinds than we find before, on a larger scale, creating types of construction that stand as models and marvels to-day; in fact, the architecture of cosmopolitans. Ideas picked up from others you might say, but applied to the different conditions of their public and private life in a masterly way; and how diverse were their conditions of life. With them we find the prototypes of many kinds of buildings that to-day are in our everyday life. Then the so-called Romanesque period, still borrowing forms, interpreting in accordance with their intellectual and artistic development, and applying to their conditions of life and thought. And so on. From the most minute examination of history we can find nothing inharmonious, or detrimental, or obstructive, industrially, politically, or artistically, in the free interchange between nations. And, curious as it may seem, this interchange in art has been known to take place when the ethnographical divisions of the human race, known as nations, were at war with one another; and also, the periods of great development do not seem to be correlated with the moral standing of the people. Nature herself shows us many instances to prove the soundness of our position. Sometimes acting alone, sometimes using man as an agent. The rotation of crops in the fields through succeeding years, the method of seed or pollen scattering on to new fields, the different character of a second growth of timber when the old growth is cut down, the many and diversified results of fruit-tree grafting,—all are but material manifestations of the great value of interchange, of borrowing, of re-creating under new conditions, and of merit in these creations. We observe all these phenomena. It is only by classifying and analyzing that we discern the truth and profit by it in the guidance of our own lives and actions. After this rough and incomplete demonstration, I think you will agree that there is not only no risk run in our architectural development by studying elsewhere, but that, on the contrary, the recognition of universal brotherhood is an art as well as an industrial and political necessity in the march of civilization.

"Thou knowest not what argument
Thy life to thy neighbor's creed hath lent."

But, granted the truth of all this, why necessarily Paris, and the École? Because the École stands to-day the peer of all others, and superior to many of them. Comparison will show this. Then, too, in the character of the modern French work, many find the worthy successor of the great Italian period of the fifteenth century. Certain it is that the French, of all nations, have fostered and cherished the sources of inspiration of that great period, have inculcated the love for it, and have striven to discern and apply to their art life of

to-day the fundamental and underlying principles which made that period the great one it was. They maintain it at Rome, in the Villa Medici or Académie de France, in connection with the École at Paris, where the Prix de Rome men of the painters, sculptors, and architects pursue their four years of research and study. The Envois de Rome are to-day the most accurate documents on the art of the past that we have. The result of this is an atmosphere of art at the École, which, being breathed by the students in architecture, infuses them with higher ideals of their art, a seriousness of purpose, and a devotion which stops at nothing. Given a training in such an atmosphere, and some good fruit must be borne. When that training is what it is and is *known* to be, and not what it is *thought* to be by some who make capital out of opposition to it, results cannot help being tremendously beneficial.

We return now to the first part of our proposition, viz, the character and nature of the training at the École. Now, of what does that training consist? At the risk of being tedious, I will briefly state an outline of the course. In the first place, the entrance examinations are in themselves very comprehensive. To be received at the École and to become in a position to start in the course itself one must give evidence of a knowledge of the Classic orders in detail and express this knowledge in the design of some kind of structure, drawn in plan, section, and elevation, and with the shadows accurately cast and washed in. A limited time is allowed for this, from 9 A. M. to 9 P. M. Then a charcoal drawing must be made, in a limited time also, from some plaster model. Then a piece of ornament must be modelled in clay. These three examinations take place on different days and under close surveillance. These are called the "admissibles," and one must pass these in order to be eligible for the mathematics and history. These latter comprise an oral and written examination in universal history. An oral and written examination in arithmetic, algebra, plane and solid geometry, trigonometry, and descriptive geometry. They are severe examinations. Rarely do more than 25 per cent of those taking the examinations get received at any one time. We are now ready for work. The entire work to be done to receive a diploma is divided into a first and a second class.

We begin in the second class and must complete the following: at least four *projets* and two "elements analytiques" must be honored with mentions in architecture, i. e., must be considered by a jury of the patrons or professors of the school as of sufficient merit to be mentioned, or, as we say, "passed." The *elements analytiques* are careful studies at one-fifth the size of execution in detail of two of the Classic orders, and mentions must be obtained in them before the student is eligible for a regular *projet*. The *projets* are judged from three points: first, as an idea, a solution of the programme given; second, as to the ability with which the first *esquisse* or study has been developed or studied out in the character and spirit of the first sketch; third, as to the merit of the draughtsmanship. Now, the first study or *esquisse* is made in a total of twelve hours, *en loge* under surveillance but with a certain amount of liberty, but no access to any helpful documents. It is an invaluable training in itself alone. It leads to concentration of thought, it develops versatility of thought, it trains the memory, it matures the judgment, develops the use of the pencil in rapid and valuable sketching and expressing of the mind's ideas. The work of the two months following is won on that twelve hours' effort, for your patron may say your sketch, your conception or solution is worthy or unworthy of being developed. In the one case, your next two months is devoted to elaborating, developing and perfecting your sketch, or else, in case it be unworthy, of studying old programmes and making sketches, studying the photographs of all the successful *projets* of the school and inspiring from the many works at your disposal on the different periods of architecture. During these two months, or, in fact, at your option, there are also other matters to be attended to. To enter the first class you must be mentioned in a drawing from the antique—a drawing in ornament—one from the nude figure, a rendered drawing in archæology. These often mean, and usually do mean, a goodly number of drawings before one of sufficient merit is produced.

To further develop the idea of the *esquisse* from the *projets*, there take place every two months, alternating with the *projets*, twelve hours' *concours* for *esquisse-esquisse*, in which the entire work is finished in twelve hours, and the judgment is based on the character of the idea and the manner of drawing or rendering. There is not time to dwell upon the inestimable value of these *concours*.

Then, there are courses and examinations in higher mathematics and mechanics, descriptive geometry, and shades and shadows, physics, chemistry and geology, stereotomy, perspective, building legislation, theory of architecture, and general history, and also a course in construction with several minor and one principal *projet* in construction with a view to the determination of the construction on scientific and mathematical principles. The beauty of this curriculum is the absolute freedom within the well-defined limits. I mean one arranges one's own work. Some men do the second class in a little less than three years; some are four years, some five years in covering all the work.

So much for the mere outline of the required work. In addition thereto, one has an opportunity of very great value—and that is, working on the studies and rendered drawings of the *projets* in the first class. By this means, ideas are fostered and cultivated, the solution of difficulties is observed, and one's general information is

largely increased. I think that too much stress cannot be laid upon the value of this work, which does not score a credit mark for you on the records of the school, but which does in the matter of your general training. The men in the first class are a body of architects each of whom has had from three to five years' experience, and their knowledge, judgment, developed and inherent taste are veritable bulwarks for the new men of the second class. Moreover, this influence is always present in the *atelier* and is an invaluable part of the curriculum. Many of these men, in addition to the school-work, are earning their livings in the offices of various Government architects; some, even, are the sons of famous and prominent architects. During my period of study there, there were four men in our *atelier* (Ginain) who were sons of Government architects of prominence. Years of office practice here at home could not equal a year or two under such influences. When you add to this the surroundings of the school buildings, the books, photographs, casts, drawings, etc., the ever recurring *concours* of the painters and sculptors, the expositions of which are held in the Salle Melpomene right at your door, so to speak, the result in the mind and heart of the student is an uplifting one, a loftier conception of architecture results, a devotion to one's chosen work is aroused, a sincerity of purpose, an increase of thoughtfulness, and the memory is stored with experiences to be drawn upon later. One realizes that architecture is a fine art. Besides the outline of the work in the course, there are various prize *concours* open to the students of both second and first classes, and once each year are the various examinations or *concours* for the Grand Prix de Rome, which are open to all Frenchmen and which are participated in very generally and are valuable to the foreigner in showing the various solutions made of the different problems. Then there is the work of the first class on a more difficult set of programmes involving all the experience of the second class and the training of one's native ability to prepare the student to grasp them.

These first-class *projets* are of a very high order, requiring wide knowledge, experience, and ability in their solution. They possess all the dignity of the veritable problems of actual practice. By them one is taught the essence of the fine art of architecture. Objection is made that the programmes are visionary and impractical. The international expositions of the French Government alone would refute this assertion, say nothing of other countries. The recent competitions of our own National Government for the Department of Justice Building at Washington, the Custom-house at New York, the Ellis Island buildings, the New York City Public Library, are all of the class to design which the training I am outlining qualifies one for.

Then, too, are the *concours* each year, outside of the regular *projets*, involving work in the decorative arts, such as the Rougevin and Godebœuf. The *esquisse-esquisse* of the first class are also more comprehensive in the subjects given, and the judgment is more rigorous on the rendering. The object of the *esquisse-esquisse* is to develop rapidity and accuracy of thought, mature and educate the taste and ripen the judgment. And, as a means of showing this development and maturity, educating the hand of the draughtsman to express on paper rapidly and effectively the idea finally selected as the most superior. The beneficial influence of such training upon men studying to be architects cannot be expressed in a few words. I believe no one questions its value. It has not been my purpose to give, as in a catalogue, a list of the requirements of the work or course at the École des Beaux-Arts. I have aimed rather to outline only the system or method of training by which the student proceeds, and this outline has been all too brief to satisfactorily portray it. I have purposely left, as a culmination, the point as to who directs the workings of the school and as to who furnishes the instruction. Under the Minister of Fine-Arts, who is a member of the Government — the school being a national institution — there is provided a director of the school proper. He and his subordinates attend to the general direction of the business part and keeping of the records. The question of administering discipline is detailed to a force of "guardians," or really a miniature "police," who look after the matters of order throughout the *ateliers*, *musées*, the *concours en loge*, etc. It might be said that the professors, as we call them, or "patrons," or *professeurs*, have no active part to take in the question of discipline, and quite right, for the patrons and *professeurs* are among the greatest men, in their various professions, in France. They are the leading Government architects, sculptors, painters, etc. They come at stated times to the *ateliers* to look over and criticize for each individual the work done. A few words, a few strokes of the pencil, a word of commendation or disapproval, a reference to documents from men of such education, experience, training and high standing, is the finishing touch of the system of education and training of the École des Beaux-Arts. From whom can one learn better than from the masters? Is that not world-wide in application? Has it not always been so? How much more the word from such a man means than from one who has little or nothing to show as his real creative work. The professor of Theory — M. Guillaume, when I was there, an architect of high standing, member of the Institute, etc., — delivers lectures on the "Theory of Architecture." At the regular intervals he proposes programmes for the two classes. The student makes his *esquisses*. He then develops his *esquisse* under his patron — again a man of the highest attainments. The drawings are exhibited for the examination and the jury is a group of the leading men in art, selected for ability. Such instruction and training cannot but be considered the soundest in principle, and most beneficial and wide-reaching in results. And

further, not content with the best, they want *all* of the best. Therefore, one has the choice of working under any one of three patrons in architecture in the school proper, and, in addition thereto, there are a number of leading architects who for many years have maintained *ateliers*, and under whom students who have been admitted to the school may study, if they so elect. Consequently, if one thinks M. X's reputation and work greater than M. Y's, he is privileged to study with M. X. With such men to guide, one can expect the training to be superior, to be thorough, to be great. One is shown how to take a comprehensive grasp of a problem with varying requirements. The features of most importance are sifted out, those of lesser importance arranged and grouped by themselves, so as to lead up to the most important. One is taught to analyze and to make a logical, and synthetical and artistic solution. To grasp in its entirety first, every problem, is the start. Relative proportion, character, simplicity, openness and circulation, organism, vitalized and rational symmetry, mass, are the first considerations. Then, when once the general scheme is adopted, the details are worked out with due regard to convenience, construction, etc. Then, too, think of the draughtsmanship. The stress laid upon that is very great, because the French are a very artistic people and draw almost instinctively.

The freedom and publicity of all schools and museums has also done for them a great deal that that same training for our architects is now doing for our people. But even while the grade of draughtsmanship is very high — I will not antagonize by saying highest — it is always the idea that the patron and jury are insistent upon. Good or fine draughtsmanship may win extra commendation for a good idea, but it never carries through to success an ordinary or poor one. Nevertheless, the training does produce great, facile and versatile draughtsmen. (To the American student this is of course a great training.) If draughting is our means of expressing our ideas, certainly beauty and eloquence are as valuable in that case as in any other. A man with great ideas is going to do more good if he can express them well and beautifully than if the expression is clumsy, or involved, or ambiguous. The hand is trained to work with the mind, and to respond accurately and effectively. Plan, section, and elevation are the usual and customary means of presenting the *projets*. Perspective is taught thoroughly, and sometimes *projets* are required in perspective, but the problems are studied in place, elevation and section almost entirely. To the advocates of perspective, here is, of course, a thing to object to. I cannot enter into a protracted discussion on this point. The great work of the Beaux-Arts does not depend upon it by any means, and the great value of studying in elevation is exhibited on too many sides. I consider, however, the rendered scale elevation more truthful, and hence a more valuable document or means, than the perspective, which is true only from one point-of-view. "Doctoring" perspectives is too familiar to the office man to ever allow of a dignified or scientific standing for it in establishing a system or a means of educating or training. What is their usually estimated value? That of presenting intelligibly something to the lay mind. (I mean to consider this point later.) It is assumed that the architect will understand an elevation. For the rendered elevation, there is a great deal to be said; in fact, everything. While mathematically an orthographic projection, it is, owing to our limited powers to conceive infinite distance, practically true from points-of-view at a very limited distance, and consequently is of more general accuracy than the perspective on this account.

Further, the question of proportions is more readily handled in elevation. (Perspective study is valuable as an adjunct to study in elevation.) The general composition and proportioning of masses is also faithfully expressed in elevation by means of accurately cast shadows and rendering so that the various planes of the composition are truthfully presented. Perspective is entirely inadequate to express in many cases. Furthermore there is a long history back of the elevation as a means of expressing the idea of a façade. It is, furthermore, the universally accepted means of expressing vertical proportions. And one thing is certain, that, at the École, the student is most thoroughly trained in all the possibilities and capabilities of the rendered elevation and rendered plan, with all the surroundings, accompaniments and embellishments of landscape gardening and architecture, sculpture, etc. A due and careful regard is always given to the "setting," so to speak, of every building. No one will deny the great importance of such education and training; and most will affirm that it is not only absolutely essential, but that we Americans are inclined to pay too little attention to it and do not fully realize its importance. Before leaving this brief outline of what the work at the school consists of, and under the influence of which the student works, I want to refer to one other matter. The spirit of the school is most liberal or catholic in its work. The work is done under the bright influence of valuable traditions. Centuries of history go to make up the material which it analyzes and studies to see how certain problems were solved. Recognizing that the spirit of Renaissance is still a vital force in the art, industrial, and scientific thought of to-day in greater measure perhaps than ever before, it endeavors to create its work in harmony with that spirit. It does not disdain the style of any period nor the lessons from any style or period. "European traditions" are held up by many as things to be avoided. They are held to stunt and cramp our growth and development. On the contrary, they are as valuable to us, or should be, as to Europe. Who are we? Are we not of European stock? Not so far removed, either. Do we decline to accept the traditions of European scientific

or industrial discovery or thoughts? No. We absorb it and mold and shape and adapt it to our purposes and special conditions, and make conform with our ideas. The work of the world in science, art and industry is to-day the property of every country and people, and is the foundation on which we must base the structure we are to rear. The telegraph, telephone, steam and electricity have to-day created a universality of conditions. Does the fact that Faraday or Galvani or Holtz were discoverers and pioneers embarrass the value of our electrical progress and creative ability? That attitude which disparages the value of "European art traditions," and the necessity for acquaintance and familiarity with and intimate knowledge of them, is an unsound and unhealthy one and unworthy of a sincere seeker and worker in the field of art. The gift of the artist is God-given. That gift has to be trained. Sometimes it runs away from its training when the measure of the gift is so large as to amount to genius. A sound and proper training produces better results than none at all, and for the average worker is essential to valuable creative work. Originality is not stunted or killed or cramped by training. It is guided. Average minds and abilities are developed. Better intelligent work than unintelligent. Richardson was not hampered by his many years at the École.

What, then, is the influence of this training on architecture in America. In the first place, it has helped to raise the standard of value in planning, in composition, in design, in style, in quality of workmanship. And one of the most important ways in which it has done this is in the influence on the public at large, where it has been a large factor. The public must be appreciative in order to make great works possible. That is one great difference between here and abroad, and always has been—a difference which many unselfish, high-minded and devoted men are struggling to obliterate. This influence upon the public has been brought about in many ways, but there it is, as witness the many evidences of the last decade. The condition, too, is riper than it ever has been, for many reasons; but the value and importance of it is not to be overestimated, and it is a sacred duty of each and every one of us to do all we can to further it for the good of our art, for the public must be made to realize that architecture is a fine-art, and that the architect is an artist-constructor primarily, and not a purely business man. Each returning student is a centre from which radiates in constantly widening waves the lofty conception and position of architecture as he has been taught it at Paris. His influence on his family is naturally strong. From there it spreads, too, in the curious and devious ways of social intercourse. Then, too, we have a double manifestation of the influence of the French school. Very many of our college courses in architecture have been remodelled more or less radically as influenced by the work at Paris, and in the strongest of our Eastern colleges this influence of the Paris school,—because it is found to be in the right direction, sound, high-minded, true and sincere,—is very strong indeed. This alone is also a great influence on the public mind, and as the constantly increasing number of students goes out, each one of them spreads the cultivation and training, and influences the taste of those he comes in contact with. The value of the training at Paris is recognized in this remodeling of courses; in appointment of men trained at Paris to positions of instruction. Our colleges are progressive, and in doing this doubtless recognize that it is a true and valuable system, and one to be desired for the inculcation of the true appreciation of architecture as a fine art. The influence of the school is also shown in the character of all important recent competitions. Aside from the important and leading part in these competitions that men trained in the École at Paris have played—and I respectfully call attention to their constantly increasing number—the character of drawings required has become almost general in being modeled after those of the École. They have come to be accepted as a type for that purpose. And this is of inestimable value, from the point of view of art as well as morals and honesty. The influence of the French school is essentially an educating and uplifting one. It promulgates positive tenets, ideas, methods. It gives you something as a guide upon which to base judgment, cultivate and train taste, and create work of high art value. It teaches you the rudiments. This becomes also a vital force in those who have studied there. There is an association here of architects who have studied there, and as a society they have been and are doing active, serious, and thoughtful educational work, in holding a regular series of *concours* among the great body of draughtsmen throughout the country in offices and in some of the colleges. They have done very much already to raise the standard of draughtsmanship, in broadening the view, of developing the taste, in encouraging serious, thoughtful work, and the results have been most gratifying and beneficial. Is this not the way to do? What other society of architects is trying to establish positive thought and methods? It will not do to criticise after the thing has been done, and ignorantly done. What the student wants is "how should it be done," by what guides? Some of the sketch-clubs throughout the country have been doing the best they could on certain lines, and they have co-operated with the Beaux-Arts Society in this respect. Is this not a legitimate field for the American Institute to enter? Would not its work become more vital, more lasting, more beneficial? Would it not be doing what it should do for the cause of art and architecture? I believe it would. Another important influence of the French school is to show the importance of a National Art School for our people as well as our artists.

It shows that the development of the artistic qualities is of national concern, whereas with us it has been due entirely to private enterprise, of art patrons and devoted artists who have banded together for the purpose. This is bound to come, and is but a logical outcome of our political institutions when once we have men in power who can see beyond an election district, or the present day. I know what will be claimed as to the opening of our public buildings to competition of our leading architects and the work of the Institute, but I also claim that this, again, is body and soul of what is taught at Paris. And why is it taught at Paris? Because it is sound, and rational and true.

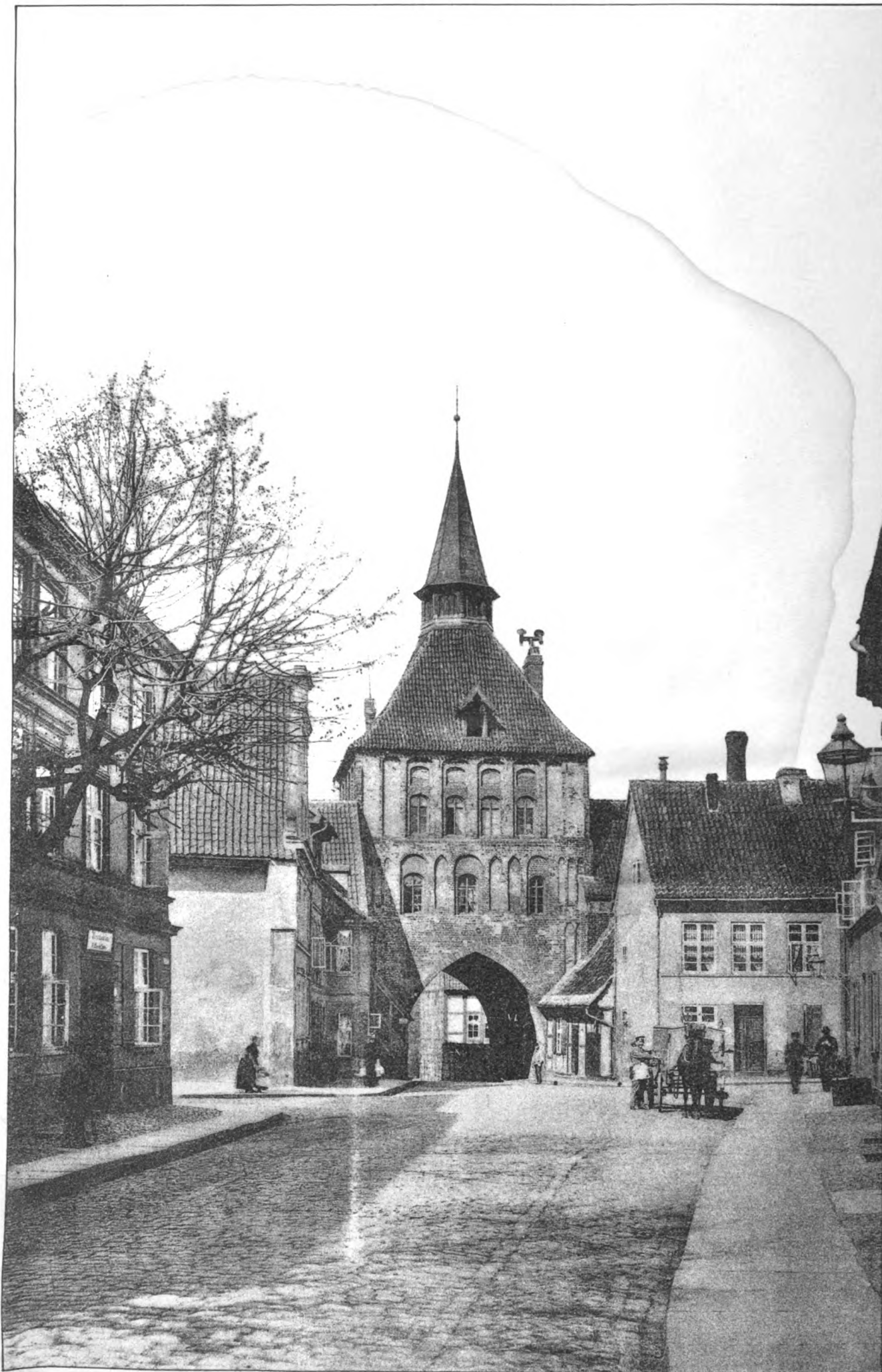
The influence of the French school is, further, to give a loftier conception of the art position of architecture. It is truly a fine art, and that position is always held before one as an ideal. With our strong practical and common-sense traits, education in this line is what we need. The standard of art value of our buildings has been raised by it, I believe. I know that many critics contend that the buildings of many of those architects trained at Paris are copies of French buildings, and, to quote a recent criticism I read, "unworthy of serious notice"—an expression of criticism based purely on the façade and totally disregarding the value of the plan. But suppose French influence be plainly shown. Because a thing is French does not mean we must avoid it. Listen to this philosopher historian:—

"Our means of intellectual intercourse unite the remotest parts of the earth; and men cannot remain strangers to each other or be ignorant of what is taking place in any corner of the globe. The consequence is, that there is less difference at the present day between the Europeans and their descendants in the New World, in spite of the ocean which divides them, than there was between certain towns in the thirteenth century which were separated by a river. If this tendency to assimilation brings foreign nations closer to each other, it must *a fortiori* prevent the descendants of the same people from becoming aliens to each other."

And this was written by De Tocqueville in 1832.

Steam and electricity—the railroad, ocean-steamer, telegraph, telephone—have brought the remotest portions of the earth into close relationship. The conditions of life are becoming more uniform. It would seem, therefore, that an excellent French idea might not be so out of place, or inappropriate, or lacking in originality here with us. The plan is the point of most vital consideration as taught at Paris, and certainly that should appeal to our minds. To make a useful and convenient thing beautiful is certainly right and desirable. And that is one of the most important results of the influence of the school; it has turned us away from the sole consideration of flashy perspectives and set us to considering the plan. And yet, if a façade shows French tendencies or influence, we get criticisms as above. The critics do not froth at the mouth, however, if the design is "copied" from the Italian, and generous praise is given to some who make appreciative use of English Gothic, and also censure to those who attempt the Gothic and miss its spirit. But a man who appreciates Gothic then tries his hand at Classic. The result is dry and archæological. That is one thing the school does,—it trains one to use any style understandingly and intelligently. And there, again, is another influence of the school. It trains to get at the essence and spirit of every style. The curious thing is that our critics take exception if one's results show the adoption of French influences, but do not if other influences are apparent. It seems to be accepted that the French school is antagonistic to the Gothic style. The position, if I understand it aright, is that the Gothic buildings are not adapted to our requirements of to-day, and were built to meet other ends. The logical construction and sound artistic merit of the Gothic style are not denied, but simply the same principles of plan and design as in Gothic lead to other results when the present complex conditions of life are taken into consideration. I feel that we are all so sincere and earnest in our desire to work out the best we can that controversy over the merits of this design or that will not be time so valuably spent as to consider this other phase of it; that even where disagreement arises as to façade, agreement exists as to the merit of plan, composition, or grouping of masses. Now, I believe we are in a formative period, and that in developing our planning ability we are laying the foundations for a true style. The training of the school results in this. This consideration, too, is now a fundamental matter in all important competitions, and in these competitions the number of men trained at Paris who reach the front and are among the winners and near them is steadily increasing. Why? Because they are trained to grasp a subject thoroughly and comprehensively and present it intelligently. That is a result we want and we welcome that influence. And, now, one more consideration. Are not the conditions of life in civilized countries getting more and more to an absolute level and similarity?

All modern developments, inventions, etc., have worked to this end. The government of society, while differing in detail, is mapped out along the same lines. Government buildings, places of assembly and amusement, living apartments and dwellings, have come to be of a nature to afford about the same accommodations everywhere. Why, then, is a French apartment-house or city-hall, or theatre or opera-house, so out of place in America or England? I claim it is not. If, therefore, the influence of the French school is shown in French ways and means on façades, it does not decrease its artistic merit so long as the purpose and character of the application be apparent. We copied freely from the Romanesque at one period. That seemed to be heralded as a new style. But, certainly, the



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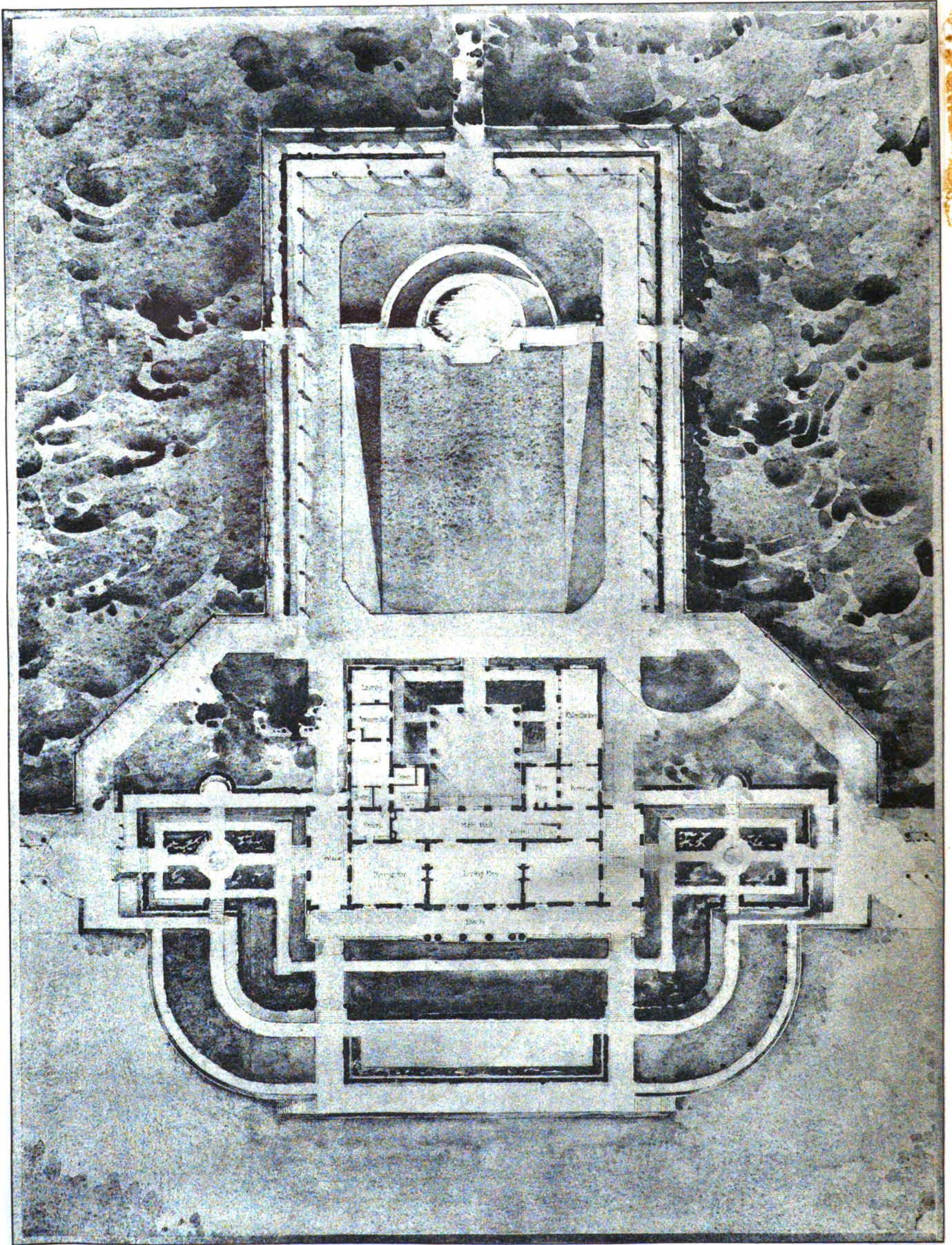
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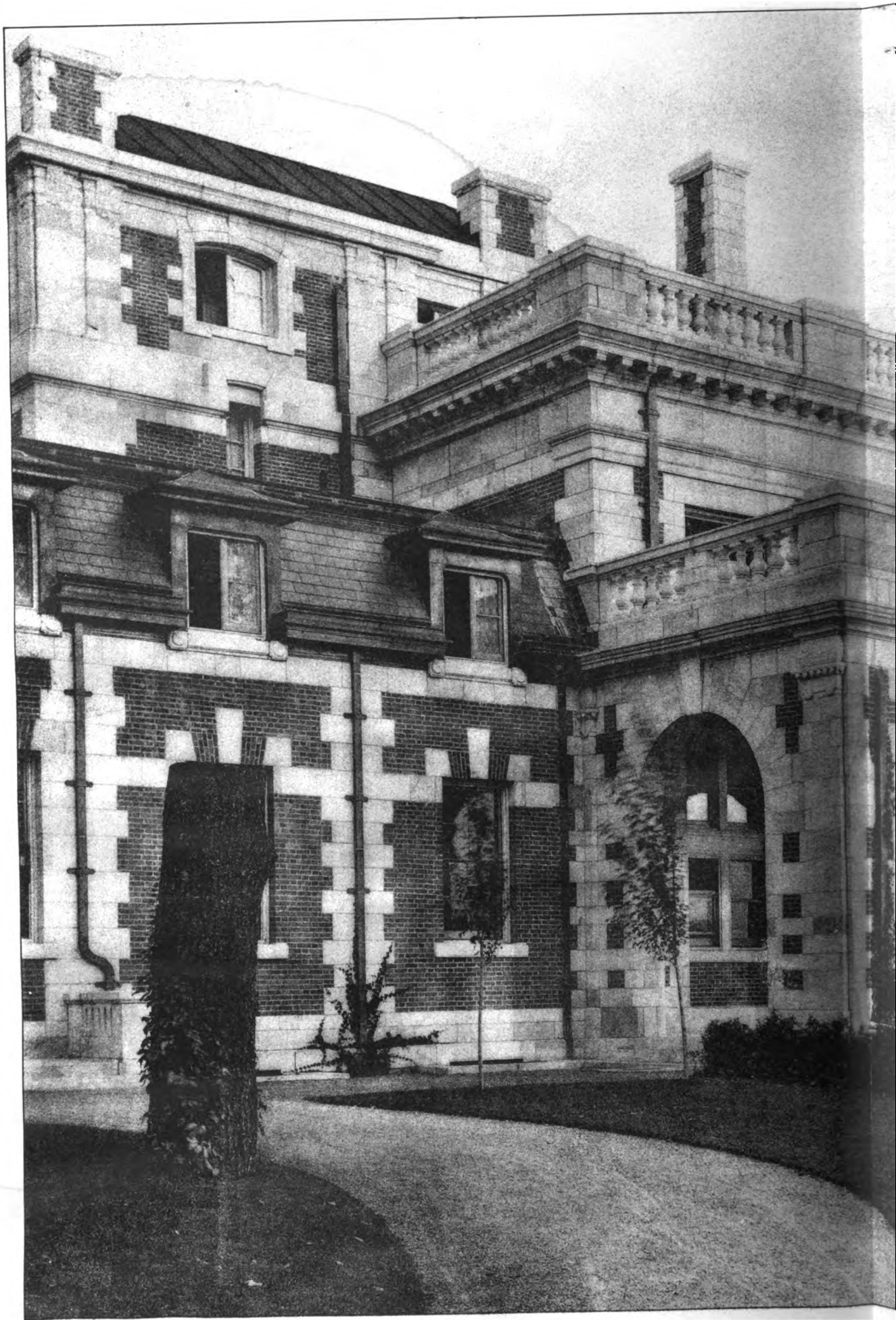
WITZENDORFSCHES HOUSE, LÜNEBURG, GERMANY.

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PLAN OF HOUSE AND GROUNDS OF GIRAUD FOSTER, ESQ., LENOX, MASS.
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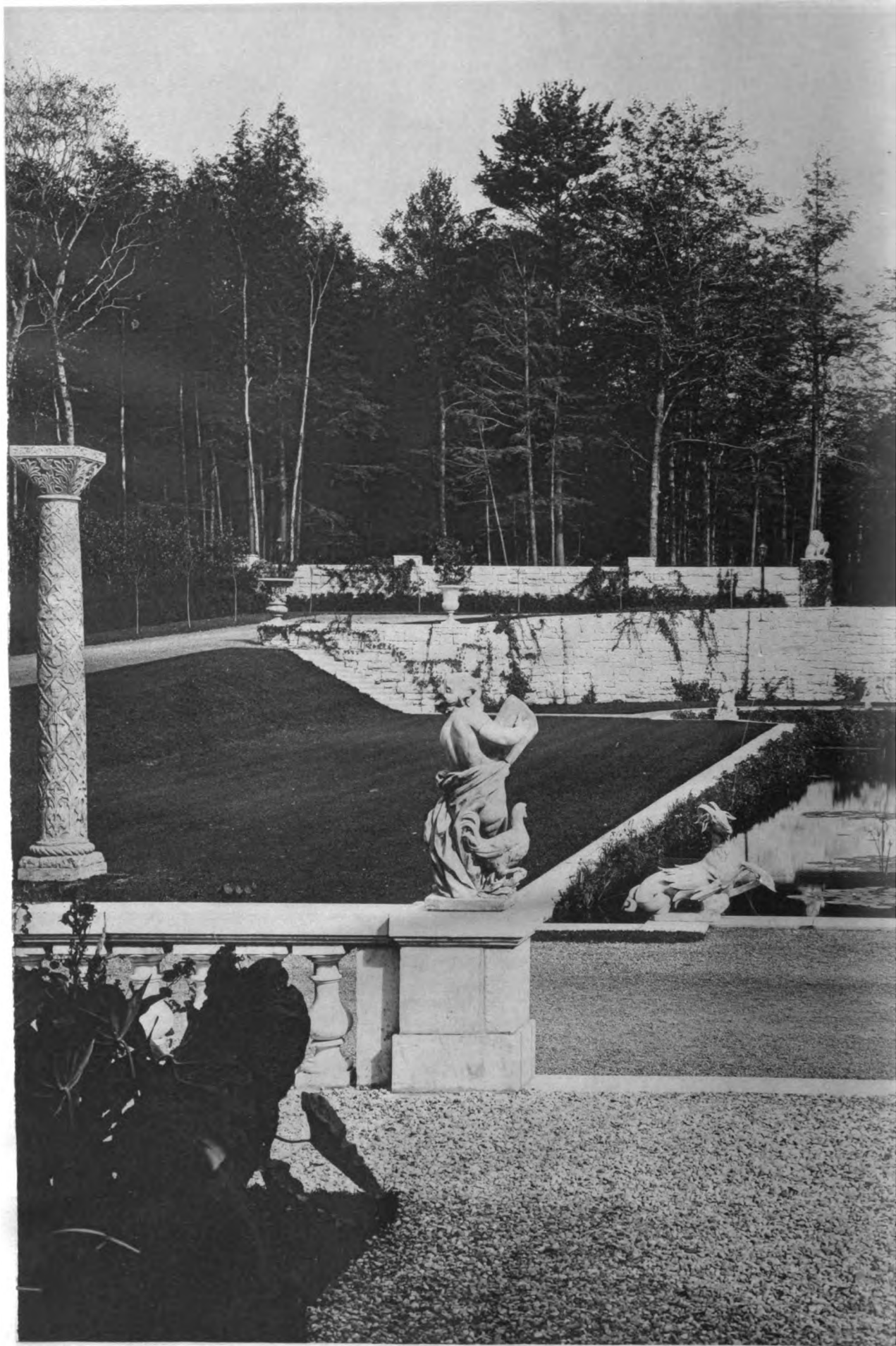


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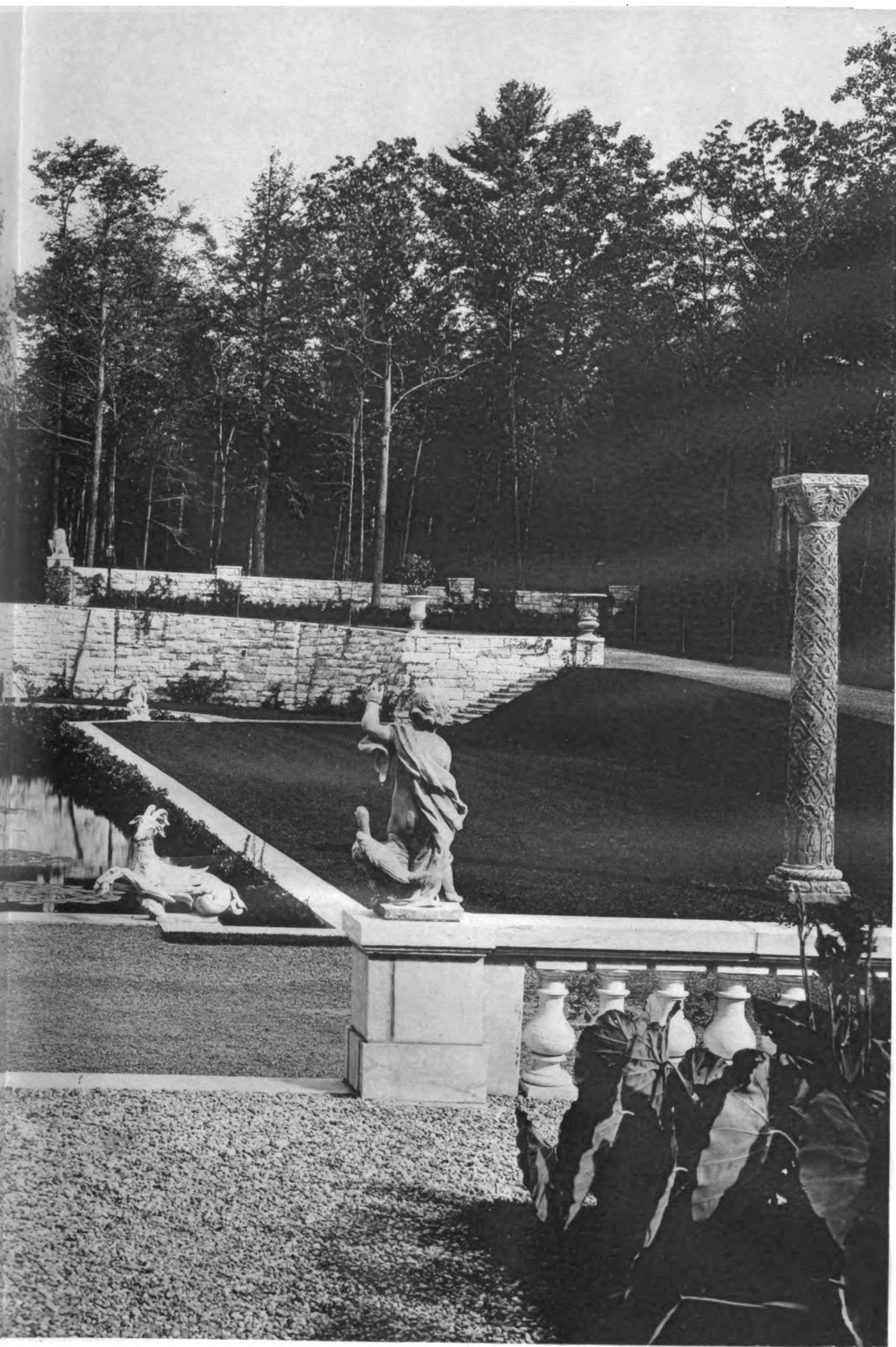
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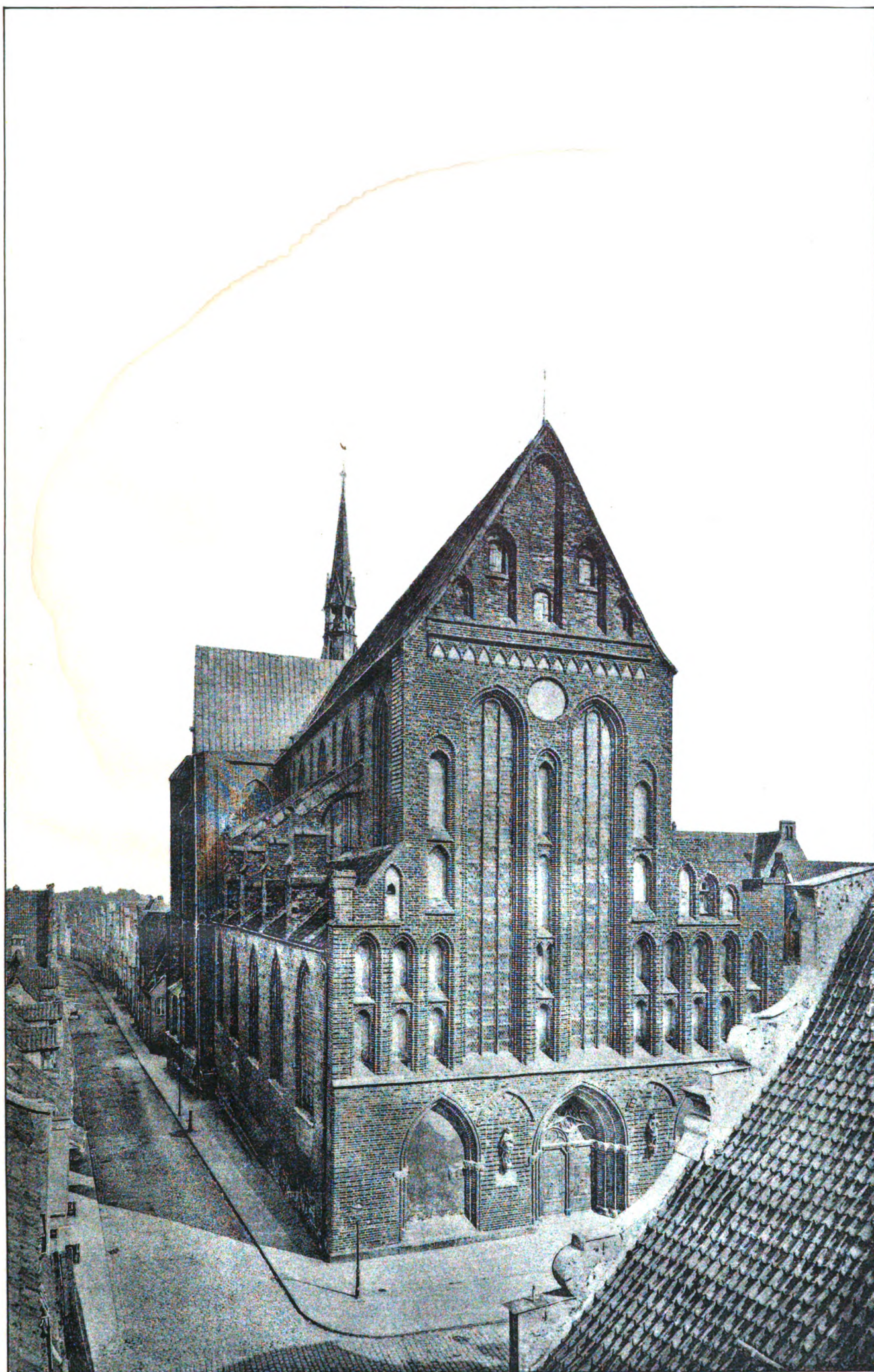
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adaptation of a monastic style of a period of dire general ignorance to buildings of our complex requirements cannot obtain the artistic justification that much that is condemned as French undoubtedly does obtain. It was merely the external form of that style that was taken, too. Its inherent and necessary construction was not taken. It was a style conceived in a spirit and under conditions out of harmony with the spirit of our age. It was picturesque, awe-inspiring, impressive, but our use of it was purely superficial, and cloaking an office-building or department-store or private house in its forms could not make those buildings Romanesque. The impulse died with the genius of the man who first used it so successfully, and we find it was the great personality of that man, and not sound art principles, upon which the use of the style was adopted.

I have endeavored to avoid the mention, for purposes of demonstration, of any particular building, because I did not wish to have the personal element brought into the discussion of the principles of our art. I could cite very many buildings, however, designed by men trained at the French school, which, to my mind, show the elevation of the standard of design in our architecture that has taken place and which is directly due to the influence of the French school. We are all striving along the same lines, and truth is acceptable no matter from whence nor by whom it is made plain to us. We want all the truth. Some of us find it in one way and some in another. Neither precludes nor excludes the other. Then, I say, all hail to any school or cult which will teach us, ennoble us, and help to develop the divine gift.

THE INFLUENCE OF THE FRENCH SCHOOL ON AMERICAN ARCHITECTURE.¹

WHEN a Consistory of the Roman Catholic Church decides on the canonization of some holy man, before his formal sainthood is proclaimed, one is appointed to attack the pious memory of the subject for sainthood. This is the *Advocatus Diaboli*. When I was asked to prepare a paper on the Influence of the French School on American Architecture, I was reminded of the ancient Roman practice. Am I then the devil's advocate? Am I to assail the prospective saint with scorn and accusation? That would be an ungracious task, for undoubtedly the canonization will take place, however the devil's advocate may protest. There seems no alternative, however; I must do my duty; I must find fault, pick flaws, offer protests; and the best way to do that is to begin with praise.

Even before indulging in this crafty procedure, however, let me enter a caveat. I cannot admit that we are considering a matter of absolutely revolutionary importance—the coming of the architectural revelation to an hungry and waiting world. We have had several new dispensations before; even I remember three of them very distinctly. There was the Queen Anne affair, and a few years later the episode of Romanesque, and still later the Colonial excitement. Each was hailed with an enthusiasm that rivalled that which acclaims the advent of the Parisian Renaissance. Each passed, and the drawing-boards that once knew them now know them no more. Is this to be the fate of the latest fashion that we have imported with our champagne and Easter millinery? Even the devil's advocate cannot claim that. There was much good accrued to us from each of the three architectural events of the post-centennial. The Queen Anne craze served the part of the swallow of salt water in the case of sea-sickness—it prepared the system. Romanesque gave us some idea of what vigor and power and honesty meant in our work. Colonial suggested to us the value of historical association—of ethnic continuity. And the Parisian Renaissance? I honestly think it will do more good than any of the others.

But is it the last word in our architectural development? Is it the revelation of all truth, of the final and perfect style? I have seen the rise and fall of Queen Anne, of Romanesque, of Colonial; I have lost my illusions; I hold it only an episode.

Yet it is an episode that has only begun—let us grant that. Thus far it has done much good and more harm; when its work is finished the good will have outweighed the evil. In time we shall come to discriminate between what is permanent and what is evanescent in the movement. At present we take both; we do not regard the thing judiciously; we accept all that is offered and on its own valuation. For my own part I believe that we can cut the whole thing in halves, and that we shall do so. On the one side we shall put the underlying principles of modern classicism—these are the lasting qualities; on the other side we shall put the style itself—this is the accident, the matter without vitality or moment. In a word, the motive is good, the style bad.

The advantage that thus far has accrued to us, and it is very great, is the sense of fundamental law, of a certain self-restraint, of the subordination of personality in radical things to something that is larger than the individual. With us architecture for a quarter of a century has been another name for æsthetic anarchy. Every man for himself and the client take the hindmost. We have planned in the happy-go-lucky fashion that prevails in England, and with almost as unhappy results. We have had as little idea of the sanctity of style as the German designers of churches. Our architectural education has been primary, not even rudimentary.

¹ A paper by Mr. Ralph Adams Cram, of Boston, read at the Thirty-third Annual Convention of the American Institute of Architects at Pittsburgh, November 14, 1899.

Now a reform has begun and, like all reforms, it has overshot the mark. It tends to curb our frontier originality, to make us something but self-satisfied units, but in the flush of its popularity it tries to force the style with which it is associated, purely by accident, as the one and only style that righteous men can employ.

This is the phase of the new *régime* that I must protest against, not the big principles of planning, composition, and design, not even the methods of teaching these, but the narrow enthusiasm that confuses a cheap and facile style with principles that are really fundamental. If the advocates of the new school would only take their stand on the really unassailable principles that drive them, instead of on the casual style that happens to be associated with them for the moment, there could be no chance for a quarrel.

Only too often they do not do this, as is proved by the fact that the public believes that the style of the Parisian boulevards is the end and aim of the whole movement. I hope I am more just than to believe this. One position is impregnable, the other I conceive to be indefensible.

It is unfortunate, in a way, that this most salutary movement should be linked with a style so limited, and so, shall I say, superficial. Still, it is hard to see how else it could have come except in this company. France is the only European country where there is a logical system of training, and France has preserved the style of the Renaissance with more vitality than it has been elsewhere. In England, Germany, America, it was quite dead, though unfortunately unburied. The new scholasticism has made it thoroughly living in France, and already it has been galvanized into life in this country. But was it really worth this? Living it is, but is not it the fictitious vitality of a style that has steadily degenerated since the sixteenth century?

M. Taine once said: "There are but two orders of architecture—Greek and Gothic—all else is imitation," and certainly no one claims that the developments of the Classic style from the days of the Parthenon down to those of M. Garnier's Opera-house have added anything of essential value to the primal type; it has been imitation and—degradation, so far as the great principles of building are concerned.

By "degradation" I do not necessarily imply a reproach to the style; indeed, the word is a measure of praise, for it shows that architecture has performed its just function and has adapted itself delicately to the changing conditions of civilization. The Parthenon would be grotesque in Paris, the Opera is admirable. Architecture is good if it expresses the time and the people and the spirit that made it possible; it is bad if it is an affectation. Really, I suppose we have less concern with the relative perfection of the style itself than we have with its fitness. The Parisian Renaissance of the boulevards is better architecture than would be the Doric of Greece were it restored on the Champs Elysées, or the Gothic of Isle de France on the Rue de Rivoli, and yet, in the abstract, as they will appear in the architectural histories of a century hence, the Greek and the Gothic are good, the Renaissance bad.

So, after all, it is worse than useless to dispute as to whether Parisian Renaissance is really a good style or a bad—for France. It is inevitable, it expresses the time and the people and the thing they are pleased to call civilization, therefore it is a thousand times more respectable than the archæological Gothic of the thirteenth century pasted over the outside of English law-courts or the barbaric solemnities of the Auvergne when they try to express nineteenth-century Protestantism.

Let us grant this; let us confess that architecture in France is living, and that the style is just as appropriate to the time as was Doric to that of Pericles; what then? Is there any reason why we should seize upon it and force it on our own civilization? Are we a province of France, are we in harmony with her ideals and her methods, are we French by instinct and sympathy? If not, wherein is the cult of the École any less affected than we who borrow a style for church building from another land? Are they not dealing with an alien style? Are they not trying to express Anglo-Saxon ideas through the medium of a Gallic language? Or have we something in this country, some phase of life, some method of thought, that demands the architectural language of republican France for its fullest expression? Yes, we have, and that very fact justifies Parisian Renaissance—just so far, but not an inch farther.

Here is where I humbly conceive the S. B. A. A. makes its fatal mistake. Impressed by the force of the solid principles that must underlie any living style, charmed by the facility of the very plausible style itself, aware of the similarity between certain phases of American life and that which is rampant in France, it leaps to the conclusion that what fits one case must fit all, and that the golden days of the past, when one style expressed all life, may be restored.

I have already referred to the great principles of design that underlie modern architecture in France; it is unnecessary to specify them or to urge their acceptance. We all admit them. By this I do not mean that we admit all the *methods* used in France to inculcate them; but that is another story and one not to be touched on here. The principles themselves we are all anxious to adopt; they are exactly as operative in the planning of a Gothic cathedral as they are in the laying out of a scheme of a palace for the President of the French Republic. These principles are independent of style. But the style itself? Here is the ground of contest. Why in heaven's name should we take it if we do not want it and if it does not fit our case? It is not particularly beautiful, and it is thoroughly French;

besides, it is about as narrow and as limited as any. There are certain things it cannot express, certain places where it would be an egregious offense, just as fifteenth-century Gothic would be an offense in a fire-engine house or a Turkish bath.

We read history and we realize that always in the past one style has been enough for any given time and people, and recognizing the implied reproach on our own epoch, when this condition does not seem to hold, we hunger for some one style which shall be for us the one, inevitable thing. This I believe to be absolutely, though not necessarily forever, impossible. Architecture, if it is real, must be accurately expressive of the impulses that create it. Well, we have now not one impulse, but a hundred. Once life was a thing of unity; church and state, industry and commerce, society and recreation were united in a whole that seemed insoluble. This condition exists no longer. Life is coming to be as various almost as the units that compose society; there is no longer unity or identity; we range from Christian Science and Tammany Hall to Browning societies and the Meadowbrook Hunt and Trappist monasteries. Can we conceive of an architectural style that should express all these things? Certainly not; any attempt to evolve or import one is vain; any style that tries to perform this function is affected and in the end ridiculous. I do not apply this criticism to the latest fashion alone; it is quite as valid in the case of Gothic or Romanesque or Colonial or any other style of history. When society was a unit, art was instinctive; it was the language of a people—not, as now, the thousand dialects of antagonistic cliques. Whoever tries to establish a universal style, or delude himself into the belief that such can be achieved, looks at architecture as a thing, not as a condition. Self-conscious we must be; it is our destiny, the penalty we pay for the peculiar kind of civilization that pleases us for the moment. We are utterly unable to create art instinctively, and the sooner we recognize this the better for art and ourselves.

Just here lies, I firmly believe, the vital error of the advocates of Parisian Renaissance. They try to force an alien style on us for all our uses, when really it fits only a few of them. On second thoughts, this is not quite just; they realize that where churches are concerned their style is quite absurd; therefore, since the style *must* be right and sufficient, churches are an anomaly and must be ignored. They are wiser in the home of the style; churches are built there, and the limitations of nineteenth-century Renaissance are recognized; but Gothic would be shocking, so the architects fall back on—what? The primitive and ignorant style evolved by the builders of the south of France, who, after their own dark ages, fell back on the Roman fragments scattered over the south and piled them up into curious patchworks of museum specimens, or, later, assimilated them into a powerful and solemn style that spoke eloquently of the stern and rugged civilization of a nascent epoch. And inconceivably ludicrous are the results where the hyper-cultivated professors of the École try to turn barbarians. Witness the church on Montmartre! artificial, affected, anomalous, it has not even the qualities of good composition and effective scale that are the pride of the school when some form of Classic is in question. Unless it be the collection of designs submitted for the Cathedral of St. John in New York, those offered for the Church of the Sacré Cœur on Montmartre were quite as ridiculous and childish as any that can be conceived. Possibly the plan selected was the least bad, but all were hopeless; there was not a touch of religious feeling, of Christian imagination, even of knowledge of the essence of the styles affected, in any one of them.

There is something wrong here. The frivolous Renaissance of the *ateliers* was recognized as impossible, therefore it could not possibly be a vital, national universal style; a return to historic periods was necessary, but then what became of all the boasted fundamental laws that should make good work inevitable, whatever the chosen style? The system had been tested and it had failed.

For the leaders and followers of the Parisian Renaissance cannot, ostrich-like, thrust their heads in the sand and so obliterate religion. The Church is, and must be, counted with. Personally, I believe it can be demonstrated that there is no single subject for design that calls out so much imagination, that demands such a use of architectural power, that makes possible such enduring and honorable monuments as a Christian church. It is also certain that with the exception of medium-cost dwellings there is no opportunity more common. But the French school of American architects is driven to the curious position of having to deny both these things for the simple reason that the style they affect is not cognizant of Christianity. This is a pretty severe indictment to bring against any man, but I do not see how it is to be escaped.

And if it is true that the new fashion is powerless before the church, so is it true that it has little excuse in some other places. As I understand it, it is a style purely French, or, rather, purely Parisian; it fits Gallic civilization like a glove and so it is good—in France. But we are English by blood and we do not think in French ways, neither do we altogether act in them. Why, then, in heaven's name, is it any less affected for us to import a style from Paris than from England? Why is Parisian Renaissance a more logical form of architecture than English Gothic? Because it is nineteenth century? So is English Gothic—now. The classic of Napoleon's time was pretty dead, as dead as Gothic in England under the Hanoverian Georges. It is vital now; so is Gothic; just exactly as living and spontaneous and contemporary as Parisian Renaissance. It is not a case of living styles, one of which is French, one English. With which race have we been the more in common?

Do not think that I advocate either the one or the other exclusively. If we are English by blood and sympathy, we are French by perversity, and all must be expressed. There is much in our society that can better be expressed through the French style than any other; there is much in our civil life, our political life, that might as well use this form of expression as any; all are too good for it, even modern German or English commercial architectures, but there is a lot, and that the very best we have, that has no more kinship with the pleasing conceits of the boulevards than it has with Norman Romanesque or the Buddhist architecture of Japan. First of all, our religious life, with all its churches, schools, colleges; then our erudition, our education, our learning, with its libraries, schools, institutions; our private life, the life of country residence, with all its English qualities of health and vigor and informality; our commercial work, where sky-scrapers demand an utterly new architectural revelation. In all these directions, I humbly submit, Parisian Renaissance, as a style, meets with the sign "*rue barrée*."

And what shall assume its place? Just whatever style seems best to fit the power that gives the impulse. Is it the Church? There the answer is the splendid Gothic that Bodley and Sedding, and Austin and Paley, and their scores of associates have restored to life and vigor. Is it higher education, the education of colleges and universities? The answer is the same. We are English; neither French nor Italian; therefore, let us not sell our birthright for a mess of — *potage du jour*!

As for our commercial work, we are working that out all right as it is; it demands a new style and we are achieving it, but not by way of the École; rather by obeying the dictates of common sense.

For our civil architecture I cannot feel that any very clear way is opened as yet. What may be called our national style, the State-house order of architecture, has advanced from the horrors of the unspeakable Mullett to the dignity that characterizes our contemporary work. It is not very original and not at all spontaneous; it is self-respecting, and that is much. Already the French school has given it a certain vitality, and if this does not become the flagrant copying, several examples of which we have wondered at lately—if we do not make ourselves ridiculous by building *mairies d'arrondissements* in Skaneateles and Kalamazoo, we may yet achieve something that will be well worth recording; only it must be American Renaissance, not Parisian of that ilk.

For we might as well admit, one time as another, that all hopes of a single style are vain. What our civilization is, that must our art be also, and our civilization is as various as our population.

To recapitulate, then, the influence of the French school is good just so long as it is the influence of solid and lasting principles of planning, of composition, of design; so long as it insists on vitality and modernism instead of archaeological erudition; so long as it demands subservience to law and order; so long, in a word, as it deals with fundamentals. It is evil when it confuses an accident of fashion and *locale* with the things that really matter; when it binds itself to the latest vagary of French fancy; when it affects to despise the Church and her architecture and to look on Gothic as a barbaric episode; when it tries to force on a branch of the Anglo-Saxon race for all its purposes, a style that is Gallic in its impulse, evanescent in its nature.

It is this ill-advised and, I am convinced, unjustified fanaticism for a certain accidental mode against which I continually protest; it is the mistaken view of a great system of education which I regret to see introduced into our architectural schools, not the fundamental system itself. Ruskin was a bigot, and he made himself absurd by his frantic advocacy of certain forms of architecture; frankly, I think some of these who now most strenuously uphold exactly what he with equal vigor denied are laying themselves open to the same condemnation.

Above all things, let us have—in architecture—no bigotry. Let us look at the thing sensibly and in cold blood, allowing ourselves to be led away by no tempests of fanaticism. We want architecture that will be logical and national, and expressive of the agency that calls it into being. We cannot create a style, for we have not finished creating a civilization as yet, and that must come first, but we have various powers or agencies that exist more or less independently of national civilization and are not consequent upon it. The Church is one of these, and we, as architects, have a vast privilege extended us in being called into her service. Her nature is fixed, her history clear, her racial succession for us a matter of record. If we reject her opportunities or trifle with them at all, we harm ourselves and her also. Her architectural quality is inevitable; if we refuse to recognize it we stultify ourselves.

Domestic life is another of these agencies, and this also rests above the vicissitudes of civilization. Our ethnic and historical connections are here equally clear. Except in "high society" we are not French at all, but thoroughly and wholesomely British, modified and developed by our own vigorous Americanism. As in the case of the Church, we have here a very great field for sensible work, though, unlike the case of the Church, it is one we have taken advantage of and have developed on sane and logical lines.

These are two examples of what I mean by the agencies for creditable architectural work that demand their own diverse means of expression—means that have nothing in common with the accident of the French scheme, though much with its fundamentals. For the rest? Well, we must do the best we can.

THE INFLUENCE OF FRANCE UPON AMERICAN ARCHITECTURE.¹

THE consideration of the influence of French architecture upon that of America is too large a subject to be properly handled in the compass of a brief paper. From the days of the Revolution, when the support of Lafayette and his followers brought the two countries into close relations of friendship, this influence has been a factor in our architectural development—or in the changes from which until lately we may be said to have suffered. To discuss it fully would require us to consider the story of our architecture during the present century, as well as that of France. It is, nevertheless, only within the past thirty years, or thereabouts, that French influence upon American architecture has counted for much, and it is a still briefer period since it has anywhere in the country shown signs of predominance. What it at present concerns us to enquire is rather, how far the strong French influence which has lately shown itself (in some quarters amounting to an organized propaganda) is wholesome, and how far it is a source of dangers to be avoided—how far its results seem to be beneficial and how far they are to be deplored; and especially it behooves us to consider in this regard the present state of architecture in France as compared with its condition, say, for instance, twenty or thirty years ago, and the kind of influence which, at this moment, it seems to be exerting upon us.

Even when we have thus limited our enquiry we shall, in order to approach the subject intelligently, be obliged briefly to recall the main facts in the history of the influence we are to discuss.

At the beginning of the century the architecture of this country was still for the most part in the hands of simple craftsmen who were carrying on the traditions of the Colonial period. But the loss of traditional skill among the craftsmen themselves and the rival and confusing claims of Greek and Gothic revivals rapidly produced that condition of chaos and entire absence of wholesome tradition which made the advent of the educated and professionally trained architect the only way out.

American architecture suffered grievously during more than the first half of this century through the want of properly trained practitioners. There were few men able to design even respectable buildings, while the public, more and more surrounded by and accustomed to ugly buildings, and without the guidance of competent leaders of taste, lost all ability to distinguish between the good and the bad. Under these circumstances, with our shifting population and the sudden acquirement of wealth by new families, the ravages of shoddy commercialism, of vulgar and meretricious shams, were greater here than anywhere else in the world. All architects will probably readily admit that we are even yet not entirely free from this contagion, which makes showiness and novelty, not real excellence or beauty, the standard. During the early years of the century a few names stand out brightly; notably, Jefferson, Bulfinch, Thornton, and Isaiah Rogers, and for some time good traditional work continued occasionally to be done. In the main, after about 1820, the succession of architectural fashions showed a gastly parody of the work going on at the same time in England—work, some of it, weak enough in itself. During this period appear the names of a few French architects. At the beginning of the century their work did not differ essentially from that of the English architects who found their way hither or from the few educated Americans, for at this time Roman classicism (variously understood) reigned everywhere, and as long as it continued exercised a wholesome restraining influence. In the chaotic days of the forties, fifties, and sixties French names very rarely appear, and the only marked evidence of French influence was in the advent of the so-called French roofs, which appeared for the first time, we believe, in the Deacon House, in Boston, built about 1850, the work of a French architect named Le Moulner. The American builders of those days were sure to make ridiculous even their attempt to imitate good things; but this somewhat unreasonable contrivance, aided by the jig-saw, became in their hands the source of more ugliness than even America has otherwise seen.

Into this chaos gradually and in increasing numbers came, during the sixties and seventies the educated architects. They came from two main sources. On the one hand from England, or under more or less direct English influence, partly by the immigration of Englishmen trained in the ideals of the English Gothic revival, partly they were Americans who in English offices or through travel had received a similar training. The second source was France, and this influence was brought to us directly at this time by Mr. Richard M. Hunt, who, as we all know, received his education at the École des Beaux-Arts, and who, apart from his powerful personality, owed his great prestige in the profession mainly to his having been the first American architect who had received a systematic academic training for the art he professed. A number of architects, among them several who, as we all know, are still leaders in the profession, were trained in Mr. Hunt's atelier in New York or went to Paris to study for longer or shorter periods in the École. In 1867 the department of architecture at the Massachusetts Institute of Technology was opened under the direction of Professor Ware, and the scheme of instruction was frankly based on that of the Paris school, adapted to meet the very different circumstances and requirements. In 1871 M. Eugène Létang came from Paris to take charge, under Mr. Ware,

of the work in design. Since then every important school of architecture that has been founded in America has sooner or later followed, more or less closely, the same model. Indeed it may be said to be all but universally acknowledged that the French system of instruction in architecture is the best in the world. Meanwhile an ever increasing number of Americans have been educated in the French school itself, some of them receiving there their whole training, others going to Paris after completing the course at one of the schools of architecture at home. Not a few have graduated from the École des Beaux-Arts, until now there are very few trained American architects who do not owe much, directly or indirectly, to that world-famous school.

When we consider the formless and chaotic condition in which American architecture for the most part found itself even twenty years ago, and the part which architects of French training have played in the striking improvements which have taken place since, it is perfectly obvious that America owes an enormous debt to France in this respect, a debt which was appropriately recognized a few years ago in the foundation at the École des Beaux-Arts of the Prix de Reconnaissance Americaine, a prize which is open only to Frenchmen. But this recognition does not by any means involve the conclusion that French influence has been an unmitigated blessing.

During the period in question great changes have taken place in France itself, changes of which it is essential we should take account in forming an opinion as to the value of French influence at this moment.

In spite of its fine qualities, almost unrivalled in the modern world, there has been constantly apparent in French architecture, since the time of Louis XIV, a note of extravagance, of theatrical display, of redundant, and sometimes tasteless, ornament, which has frequently injured some of its finest productions; but there have nearly always been men like Labrousse, Daumet, Vaudremer, who have, by precept and example, set their faces against this extravagance. But the wave of indiscriminate admiration of the vagaries and vulgarities of Rocco architecture, which has of late swept over the civilized world like a plague, has made itself felt nowhere more strongly than in Paris, and the mad craze for novelty for the sake of novelty has run riot in an extravagance of *hautes nouveautés* which is enough to make Labrousse and even André turn in their graves. This phase of *fin-de-siècle* decadence has made itself especially felt in the designs for the forthcoming Paris Exposition, which, magnificent as it is in conception and general composition, is producing structures almost delirious in their unreasonable and wanton ugliness. There are, of course, men still doing superb work, like Nènot, for instance, in his New Sorbonne, and the sound traditions of French training still make themselves felt amid all the extravagance and vulgar search for the merely novel—miscalled originality. But the main tone of French work at this moment, the main trend of taste at the École, has sadly changed since the ateliers of André and of Vaudremer, at opposite ends of the scale, were typical. This change, like every phase of human development, is expressive of the condition of the community that produced it. This decadence of taste, which must be evident (one would think) to every unprejudiced and competent observer, is of a piece with the social depravity which has produced the salacious French novel and the corruption that shows itself in Panama scandals and Dreyfus affairs. The want of sane, wholesome life, of high and pure and sweet ideals, which the best of Frenchmen themselves openly deplore, has its inevitable effect on taste in the fine-arts. The jaded and sated palate calls for some new sensation, and the result is all the more deplorable because of evident ability and training prostituted.

Let us now briefly consider some of the fine qualities which have been, and still to some extent are, apparent in French architecture, and then let us look somewhat more narrowly at the present French ideals and see whither they are tending.

The training of the École des Beaux-Arts, shaken, though it had been, by the Neo-Grec movement of the middle of the century, and, in spite of extravagance, which already showed itself, was still, even twenty years ago, synonymous with the somewhat rigid traditional Classicism which had been so powerfully inveighed against by Viollet-le-Duc. Cold and unsympathetic as it sometimes was, it had, at any rate, this advantage: that it tended to curb the growing tendency to license, and that it was a safe medium for instruction in the fundamental principles of architecture. New forms and modifications were looked at somewhat askance and were only gradually admitted, as it were, to recognized standing. It was somewhat unyielding and its notion of correctness of style was still mainly a matter of tradition. But what then, as now, constituted the strength of French training and practice was its insistence on composition, its excellence of proportion and mass, and, above all, its splendid mastery of monumental planning. It taught careful consideration of fenestration, the study of light and shade, the effective placing of ornament, and showed that rhythmic proportion has relation to all these. It insisted that a building must tell its story; that it must be expressive of its purpose, and that the exterior must be expressive of the interior arrangement, of the plan, which is the key to the whole composition. Interior and exterior, plan and elevation, must work together to produce one organic and rhythmically connected whole. In insisting upon these things, it was teaching that architectural design depends, not upon caprice, but upon principle, and it gave, up to a certain point, some understanding of what these principles are. In doing all this it inculcated, though perhaps not always

¹ A paper by H. Langford Warren, of Boston, read at the Thirty-third Annual Convention, A. I. A., at Pittsburgh, Pa., November 14, 1899.

clearly, the fundamental laws upon which good architecture, upon which fine-art of every description, has always depended and always will depend. And it taught and still teaches, what, perhaps after all, is for the impatient American the most important lesson, that good results in the fine-arts are only to be attained, in the first place, by long and patient and severe training; and, in the next, by equally patient and painstaking study and restudy of each problem as it arises. On the other hand, the principles taught seemed to stop at the ornament, as if the smallest part of any work of art could be subject to any other laws than those that must govern the whole, or as if one part must be a matter of principle while another could be a matter of mere tradition or of caprice. The ornament—most of the detail, in fact—though often carefully studied and always delicately executed, was apt to be either meaningless and extravagant or coldly traditional in its form.

Moreover, the training of the École, while thorough along its chosen lines, was narrow, so that those brought up exclusively under its influence were generally strangely ignorant of all forms of architecture except those which were traditional within the school. They had made no adequate study of the historic styles and so had no understanding or appreciation of the way in which the immutable principles of design expressed themselves in other forms and under other conditions. Their experience was so narrow that the laws of design could not be thoroughly appreciated as the result of principle, and these laws thus became, in their hands, little more than a set of academic formulæ. The designs produced and the judgment formed were alike too apt to be the mere conventional result of conventional rules the reasons for which were but dimly apprehended.

The inevitable revolt against this rigidity grew apace, and the reaction under existing conditions in France has led to that license of design which we have already characterized, and which has gone so far that the use of any traditional form seems now to be regarded in some quarters as a sign of slavish devotion to precedent, an indication of want of thought, an evidence of complete lack of originality. The fundamental laws of composition are still taught as before; but originality, so called, mere capricious novelty, has become the standard rather than beauty and reasonableness. The changes brought about have not been the result of organic growth and development, but have been produced (to use the apt phrase of Professor Hamlin in his history of architecture) by "the striving for originality and the effort to discard traditional forms." Its ideals are no longer those of purity and expressiveness of architectural form, but of novelty. Expressiveness of a kind is indeed aimed at, but it takes the unimaginative form of, for instance, ornamenting the exterior of an army and navy building with cannon-balls, gun cartridges and conning towers, put on without the slightest regard to the architectural purpose of the parts to which they are applied.

If there is one thing that the American public has needed for the improvement of its taste in art, it is to be taught that there is something better than novelty and change; that what is beautiful and reasonable is the ideal to be aimed at, not to be "up-to-date" or "in fashion." It needs to be taught that the finest things in art are usually the simplest,—those things which at first sight seem easiest, most obvious, most natural—not those things which by their overloaded ornament, their *bizarrerie*, their theatrical posturing cry out for attention. We need to appreciate that those qualities which make fine manners also make fine art—restraint, repose, naturalness, graciousness.

We have been learning these things; but are not helped forward by indiscriminate admiration of this latest and least admirable phase of French art.

It is curious that those who are loudest in its praise are those who least of all show signs of putting one of the chief precepts of its doctrine into practice in this country. This doctrine teaches, and rightly teaches, that a country can have a vital art only in so far as it solves its own problems in its own way, expressing freely its own ideals in meeting its own wants. The art of France is held up to admiration as being such a vital art. This is to a degree true, and that art expresses French ideals, French taste—and also French depravity. Now we do not take a single step toward producing an art of our own by a direct importation in all its details of the forms of French architecture, which have nothing whatever to do with the principles taught in the French school, but are the mere accidents of environment. On the contrary, whatever beginnings of vital work are found in our midst are strangled by such direct imitation, and it is worth noting that the most successful and characteristic developments of American architecture, the commercial building and the country-house, do not depend in the least on direct French precedent. Indeed, the country-house is a problem which modern French architecture seems incapable of solving in an interesting way. But it is argued that we must make a beginning somewhere and that the best we can do is to take the best style of modern times as a point of departure. The French style meets our wants most nearly, it is argued, because it is the most modern. This is a manifest *non-sequitur*. Moreover, as we have noted, we had made beginnings to which this direct French importation comes as an interruption, which, if successful, would make us architecturally a mere province of France. Town-halls which look like French *mairies* are manifestly un-American and are felt to be exotic, out of place. Buildings which precisely recall the Parisian boulevards are obvious indications of lack of ideas and lack of vitality in our own art, and this would be true were French art far finer than it is.

The road to reasonable independent development does not lie this way. The love of extravagance and the desire for mere novelty on the one hand, and the close and unreasoning imitation and copying of the work of others, ancient or modern, on the other are the Scylla and Charybdis of American art. It seems to me that the recent French propagandism contains both dangers.

What we need is to understand more and more fully those fundamental principles of our art which underlie the best work of all times and all styles: to understand and know thoroughly the architectural forms of the past and appreciate how in them these principles were expressed: to use these forms in our own work freely, varying from them not capriciously, but according to principle, as changed conditions, changed modes of construction, changed ideals seem to require. Working in this way, the modifications which come will not be forced, but natural, and will have that quality of inevitableness which is inseparable from vital work and is one of its greatest charms.

We have learned much from France, and yet have much to learn; but let us not take from her indiscriminately.

In so far as the French influence helps us to sound methods of education; in so far as it teaches us composition, monumental planning, the importance of balance and proportion in plan and mass; as it leads us to regard our buildings as organic unities, and to make exterior and interior hold together as rhythmical component parts of one whole; as it leads to careful consideration of fenestration, of light and shade, of scale relations; as it discourages hasty and slipshod and ill-studied work; in so far, in short, as it helps us to principles and to devoted and painstaking study, its influence has been, and will be, helpful and wholesome.

But in so far as it leads us to mere copyism of the externals of recent French buildings; in so far as it leads us to seek novelty in place of excellence; in so far as it encourages a taste for extravagant and overloaded ornamentation, and tends to destroy delight in simple and quiet work,—in so far as it does these things, the French influence is deeply to be deplored.

But I have little fear for the result. We have in this country made great strides, and, I believe, shall continue to progress. The pendulum swings back and forth, but the fingers move onward. The evil that we have suffered (and it seems to me we have suffered from an overadmiration of a style that has grave defects as well as great qualities) will, I venture to think, prove temporary, while the gain will be permanent. The French copyism is a mere passing fad. The principles that have been learned we may hope to keep.

Those who have been educated exclusively under French influences and have imbibed French ideals so completely that they have failed to see clearly the limitations of French work, will inevitably in time be influenced by their environment and by the work of those of other training. Already we may discern signs that this is the case. Both sides will gain from both, and the resultant will be different from anything we can now foresee.

By way of conclusion, and speaking now merely of the training in the French School, these two considerations may be suggested: That, since discrimination needs to be exercised with regard to French work, it is best that impressionable students should not come under its direct and exclusive influence until they have had such training as may enable them to discriminate, until they have been taught to think and reason for themselves with regard to their art, and that the schools we now have in this country afford ample opportunity for such training; and, secondly, that if we are to have an architecture in any true sense national, if we are to be architecturally anything more than a mere province of France, we must shortly cease to be dependent to the extent we now are on the French School.

REPORT OF THE BOARD OF DIRECTORS.

THE Board of Directors elected at the Convention held in Washington, D. C., November 1, 2 and 3, 1898, held their first meeting at the Octagon, January 5, 1899. The Executive and Judiciary Committees were elected by the Board of Directors and the President appointed the Standing Committees for the year 1899, as published in the last *Proceedings*.

Forty-four new members have been elected during the year and twenty applications are now pending.

Two Fellows of the American Institute of Architects have died since the last Convention. Mr. William Crawford Smith, born November 26, 1837. He served with distinction in the Confederate Army. After the Civil War he resumed the practice of architecture in Nashville, where he took a high standing professionally, socially and as a man. He was prominently connected with the Nashville Exposition, designing the reproduction of the Parthenon. Mr. Smith joined the Institution in 1881. He was elected a member of the Board of Directors of the Institute in 1892-1896, and again in 1898. In 1895 he was elected Second Vice-President.

He had endeared himself to the profession with whom he came in contact, by his courtesy, high sense of honor and genial manners.

At the breaking-out of the Spanish-American War, he was made Colonel of Volunteers in a Tennessee Regiment, and was on his way to Manila at the time of his last election as a Director of the Institute. He died from an attack of apoplexy while at the head of his command on the firing line, February 5, 1899.

Mr. John R. Church, of Rochester, N. Y., who joined the Institute

in 1888, died February 7, 1899, being in his forty-fourth year. Mr. Church was in active practice for many years in Rochester, designing the new auditorium and the Central Presbyterian Church of that city.

Mr. Hackney, of Kansas City, Mo., who was elected as Associate Member in June, 1899, died May 25, 1899, while his application was pending.

The location of the permanent headquarters of the Institute in the Octagon House, gives room and opportunity for a collection of material that may be valuable in the future history of the Institute, and of the profession of architecture in this country.

The Institute has received oil-portraits of William Thornton, Benjamin H. Latrobe, large photographs of Thomas U. Walter, and Edward Clark, all of whom were architects of the United States Capitol, presented by Mr. Edward Clark; an oil-portrait of Mr. Richard Upjohn, presented by his daughter, Mrs. Charles Babcock, and a model of the Hunt Memorial, presented by Mr. Bruce Price, who has also donated a sufficient amount to put the model in repair. Drawings of Patent Office Extension and German Parliament Building have been presented by Mr. Adolf Cluss, and 100 photographs of the old Capitol Building, presented by Mr. Glenn Brown.

The exchange list of the Institute has been small, the Royal Institute of British Architects and the American Society of Civil Engineers being the only Associations which have sent their publications in exchange with regularity. Correspondence with American and Foreign Societies, of which the Secretary could obtain information, and with periodicals relating to architecture and allied subjects, has resulted in obtaining agreements to exchange publications with the Hellenic Polytechnical Society, Athens, Greece; Royal Commission of Art and Archaeology, Brussels, Belgium; Society of Berlin Architects, Berlin, Germany; Society of Engineers and Architects, Vienna, Austria; Society of Italian Engineers and Architects, Rome, Italy; Architectural Association, Berlin, Germany; Swedish Society of Architects and Engineers, Stockholm, Sweden; Society for the Propagation of Architecture, Amsterdam, Holland; Society of Japanese Architects, Tokio, Japan; Royal Society of Architects, Antwerp, Belgium; Architectural and Social Society, Amsterdam, Holland; and eleven of the architectural clubs and similar societies in the United States.

Sixteen periodicals have agreed to exchange with the American Institute of Architects.

A complete list of books, pamphlets, periodicals and Society exchanges will be given in the Report of the House and Library Committee.

The Institute has received 43 books, consisting of 63 volumes.

Pamphlets on 42 subjects, consisting of 108 volumes, 16 periodicals, containing 259 numbers, 41 Society publications, containing 180 numbers — total, 142 titles and 610 volumes, or numbers.

In the future the Board of Directors think it desirable to publish a Quarterly Bulletin, giving an index of the periodicals and Society literature which is received in the way of exchange; and in the same bulletin, to give the titles, size and contents, with a short review of current books on architecture and allied arts.

The repairs on the Octagon House, which were not completed when the Convention was held in Washington, November 1, 2 and 3, 1899, have been completed by the Committee in charge at that time, and the House Committee which took charge of the Octagon after January 1, 1899.

The repairs have consisted in a thorough cleaning and painting of all the walls, ceilings and woodwork in the halls and the principal rooms on first floor, together with the offices of the Secretary of the American Institute of Architects on the second floor.

The Washington Chapter and the Washington Architectural Club have both fitted up their rooms thoroughly and comfortably, leaving the only portion of the house that was not repainted and repaired, the third-story rooms, which at present are rented by artists. The old mantels and cornices on the first floor were found in a remarkably well-preserved condition; all portions that were missing were duplicated and replaced. The old stone steps and wrought-iron railing have been replaced by new steps and portions of new railings. Parts of the old wrought-iron work were still in existence; these were used, and their features duplicated.

A modern toilet-room and furnace have been installed in the house, and the necessary furniture for the Secretary, consisting of a typewriter, safe, desk, chairs, letter-press, etc., have been purchased. The old garden has been planted with box, firs and old-fashioned flowers, so as to be in keeping with the house, giving the whole quite an interesting appearance. All of the books, models, pamphlets, paintings and photographs mentioned as having been contributed have been installed in the Octagon House, and are already of sufficient importance to make a very interesting exhibit.

Under the Tarsney Act, and its influence, a result of the work of the Institute in previous years, some noted competitions have been very satisfactorily conducted by the United States Government. The New York Custom House; the Carnegie Library, Washington, and the New Department of Justice, have all been let out under competitions, more or less model in their form. The results obtained have been very satisfactory. The work of the Legislative Committee will be given more fully in their Report to the American Institute of Architects.

The office of the Institute has been kept open from 9 o'clock in the morning until 6 o'clock in the afternoon, and members of the

Institute visiting Washington are received, and all possible courtesies extended to them by the Secretary or his assistant.

THE SOCIETY OF ARTS.



THE *Journal* contains the following abstract of the history of one of the most useful of English societies: The Society of Arts is one of the three oldest of the learned and scientific societies in the country, for when it was founded in 1754 only the Royal Society and the Society of Antiquaries were in existence. As it had a large field to itself it was comprehensive in the scope of its work. For a long time it alone filled the place which is now occupied by the many societies which have since been founded for the promotion of special branches of science, industry and art. It was—as indeed it still is—at once scientific, technical, industrial, commercial and artistic. Before the foundation of the Royal Academy it held exhibitions of pictures, and assisted in the education of art students by prizes and examinations. Until the Royal Agricultural Society was established it was the principal institution in the country for the promotion of agriculture and the application to agriculture of scientific principles. It anticipated the Institution of Civil Engineers, and the other engineering institutions, in the encouragement of civil and mechanical engineering. It encouraged chemical research, and the application of chemistry to industry, before the Chemical Society and the other chemical institutions which in later years have dealt with various branches of that great science. And it promoted arts and industries in the colonies more than a century before the Royal Colonial Institute or the Imperial Institute.

During the first half-century of its existence the objects of the Society were principally attained by the award of premiums for useful discoveries and inventions. In this way it distributed 28,434, between the years 1754 and 1783. There was probably at the time no better way of discovering meritorious inventions and bringing them to public notice, though it was liable to the obvious imperfection that the prizes could be awarded only in accordance with the best knowledge of the time, whereas the objects to be rewarded were, or ought to have been, in advance of such knowledge.

In the department of fine-arts it had a share in assisting the education and encouraging the youthful efforts of many of the most eminent artists from the time of Reynolds to our own days. On its prize-lists are found the names of Richard Cosway, Joseph Nollekens, George Romney, Sir Thomas Lawrence, P. R. A., Sir William Ross, William Mulready, Thomas Bewick, Aloys Senefelder (the inventor of lithography), John Flaxman, W. Wyon (the medalist), Sir Edwin Landseer, Sir Charles Eastlake, P. R. A., W. P. Frith, J. C. Hook, Sir J. E. Millais, P. R. A. One of the first, if not the first public exhibition of pictures in London was that held in 1760 at the Society's rooms in the Strand, near Beaufort Buildings, an exhibition which really led to the foundation of the Royal Academy in 1768.

The improvement of agriculture was one of the very earliest objects of the Society, and the first volumes of its transactions are devoted in large measure to this subject. Indeed, so important a branch was it of the Society's operations that the publication which practically served as the Society's transactions for the first few years of its existence was known as "*Dossie's Memoirs of Agriculture*." It would take too long to record even a selection of the improvements it effected, or tried to effect. Some of the more important may be merely mentioned. The want of timber for ship-building and other purposes was one of the great needs of the country at the time of the Society's foundation. The country was to a large extent deforested, and some organization was required to prevent the spread of the evil. An earnest effort was made by the Society to attract public attention to the need for renewing the stock of timber. Between the years 1775 and 1781 twenty-two gold medals and a few smaller prizes were presented to landed proprietors in various parts of the country. About three-quarters of a million trees were planted under these awards. The attempt was entirely successful, thousands of acres were planted, and as a practical result the supply of timber was renewed. Many of the woods throughout the country owe their present existence to the initiative of the Society of Arts.

The encouragement of the arts and industries of the colonies was another of the first objects to which the Society devoted itself. The colonies of the country, it is to be remembered, were then all situated in North America (now the United States) and the West Indies. Prizes were given for new colonial industries, for the introduction of machinery into the colonies, for the importation into this country of colonial products. Contemporary records show how greatly the Society's efforts were appreciated in the West Indies and in the American colonies. Many valuable plants were introduced abroad, and many valuable products brought home through the agency of the Society.

A special division of the Society was devoted to mechanics and manufactures, and another to minerals and chemistry. By means of the two committees which dealt with these divisions, large sums were distributed in prizes and donations to meritorious inventors. The range of work of these two committees was so wide that it is difficult to give even a summarized account of what they did in the first sixty

or seventy years of the Society's life; but it may safely be said that there was hardly a single branch of industry at the time which was not helped forward by their efforts. The manufacture of iron, textile manufactures, chemical manufactures, and in later times all the various applications of science to manufacturing purposes, received a share of the Society's attention. Perhaps some of the prizes were ill-bestowed, and many deserving inventions were refused awards. Looking back through the old records of the Society it is not difficult to discover occasional instances in which rewards were refused to inventions in which present knowledge can perceive the promise of future discovery. But on the whole the premiums were judiciously bestowed, and were of much value in stimulating and rewarding invention. But for the unwise prejudice which prevented the recognition of any patented object, the premiums would have been more useful still.

As time went on it was found that the award of prizes for meritorious inventions was not the most advantageous way of attracting public attention to them. The opinion of a committee on a new and untried invention is very liable to error. The more novel the invention, the more varied from previous ideas, the less likely is it to commend itself. This was even truer at the beginning of the century than now, when the great and startling developments of science have rendered public opinion less intolerant of novelty.

It was found that the best test of merit was practice, and the best service that could be rendered to an inventor was to give him the opportunity of publicity. In the industrial, as in the material world, the rule of the survival of the fittest holds good. Hence the practice was instituted of holding meetings, at which new scientific discoveries and their applications were described and discussed. This idea seems to have been mainly due to Mr. William Aikin, the distinguished chemist, who was secretary to the Society in the early part of the century; and he introduced the practice of delivering lectures on various branches of industry and improvements connected with them. In 1842 the practice was reduced to a system, and from that time to the present day one of the most useful portions of the Society's work has been the holding of such meetings for the reading of papers and the delivery of lectures.

The recorded reports of these meetings for many years past form a continuous chronicle of the progress of the applications of science and of art to practical purposes, and there have been few of the prominent technical scientific discoveries of recent years whose introduction to public use has not been assisted by the Society of Arts. The long series of "Cantor Lectures" delivered before the Society form almost a full industrial cyclopædia. In their delivery their special educational value was very great, and their published reports form a useful contribution to the industrial history of the country.

While referring to the Society's meetings special reference should be made to those of the Indian section, the value of which in promoting a knowledge in this country of subjects relating to the Empire of India has long been and is still constantly recognized by the Government of India and by the India Office. If the work of the foreign and colonial (originally the African) section has been less important, that is only because its special field of labor has for some years been occupied by the Colonial Institute, and more recently still by the Imperial Institute, a body whose very existence is a high testimony to the work of the Society of Arts, founded as it was by H. R. H. the President of the Society on lines similar to the older body, and to carry out, under more influential auspices and on a larger scale, precisely the same work.

As special institutions came to be established to deal with various branches of science and industry, the Society gradually abandoned some of its older fields of work, but it has still remained the one unspecialized Society, always ready to afford an arena for the discussion of any prominent subject coming within its rather wide scope. There are now some fifty scientific societies meeting in London, dealing with different branches of science. It is not too much to say that the greater number of them deal with subjects at one time or other included in the Society of Arts programme. Many of them originated, more or less, directly from the Society of Arts. Some originated at meetings held at the Society of Arts' rooms, others were promoted by the more active members of the Society at the time. It may, however, be said that as each relieved the Society of some of its work, it left behind more than sufficient new material to occupy the energies of an institution dealing not with special departments of science, but with the practical application of all departments.

For it may be said that the only way in which the Society has differentiated itself from other institutions of a similar nature is that it devotes itself principally to the application of science and of art to practical purposes. Its value in this direction was recognized by the Prince Consort, who found it a most useful instrument for carrying out his own ideas and impressed upon it much of the character it now bears.

Apart from its regular work, holding meetings for the advancement of knowledge and the dissemination of useful information, the Society has devoted itself to a vast number of definite public objects, to the promotion of which its organization has been in various ways applied. Some of them may at least be mentioned. Perhaps the most important service ever rendered by the Society was the establishment of international exhibitions. The first Exhibition of 1851, as is well known, was originated and its organization carried on till it could be handed over to a Royal Commission by the Society. In

the same way the Exhibition of 1862 was started, and to a large extent carried out by the efforts of the Society.

Another great branch of the Society's work is that dealing with education. Through its efforts was originated the system of carrying out local examinations from a common centre, which soon after received such full development through the agency of the Science and Art Department. The Society's examinations, founded in 1856, though its example has been followed by other agencies, amongst whom must be specially mentioned the Local Examinations of the Universities, still continue to be the only examinations of an important character dealing with commercial education.

It was the Society of Arts that first drew public attention to the need for technical education, and, by the holding of conferences and discussions on the subject, aroused the public feeling which led to the appointment of the Royal Commission of 1881, with all the vast developments of that branch of education which have followed the report of that Commission. Among the many institutions whose establishment was fostered by the Society may certainly be mentioned the City and Guilds Institute for the promotion of technical education, which at its origin was greatly assisted by the Society, and has of late years developed into a most important educational agency, the system of technical examinations founded and carried on by the Society on a small scale for some years, in spite of opposition and indifference.

The great improvement in decorative art which has marked the last half of the present century may be said to have had its birth in the Society of Arts. Chiefly owing to the strenuous efforts of the late Sir Henry Cole, the Society originated a campaign against the ugliness and ignorance in artistic matters which was certainly prevalent in England about the end of the first half of the century. Its efforts were for a long time met with ridicule, but public opinion was gradually converted, and the value of beautiful and artistic surroundings in daily life, instead of being a matter to be sneered and laughed at, is now regarded as a matter of course.

It would perhaps be too much to say that the attention which matters of public health now receive was entirely, or even in the main, due to the efforts of the Society, but it did a most valuable public service in popularizing a knowledge of the subject, and disseminating accurate information on sanitary matters by means of the conferences it held on sanitary subjects from the years 1876 to 1879.

Many other public objects have been initiated or promoted by the Society. It took an active part in the improvement of the Patent Law, since the first improvements in 1852 down to the last Patent Act of 1883. It was the action of the Society that first secured protection for copyright in works of art. Its food-committee was one of the earliest agencies to draw attention to the necessity of providing means by which meat and other foreign food-products could be successfully imported. One of its committees for a long time urged on the Post-office the necessity for a Parcel Post (suggested in 1858), and worked up public opinion until it was granted. Another for a long time urged the necessity of cheaper telegraphic communication, and suggested to successive Postmasters-General the desirability of shilling telegrams long before they were granted.

The Royal College of Music was founded as the National Training School for Music by the exertions of the Society. As far back as 1839 the Society dealt with the question of uniform musical pitch, and established a pitch of its own, which was only recently formally abandoned in favor of the better-known French *diapason normal*.

The introduction of moderate-priced scientific apparatus was initiated by the Society of Arts' microscope in 1855. Thousands of these instruments were sold for three guineas, at a time when it was believed that no microscope of any practical value could be produced for four or five times that amount.

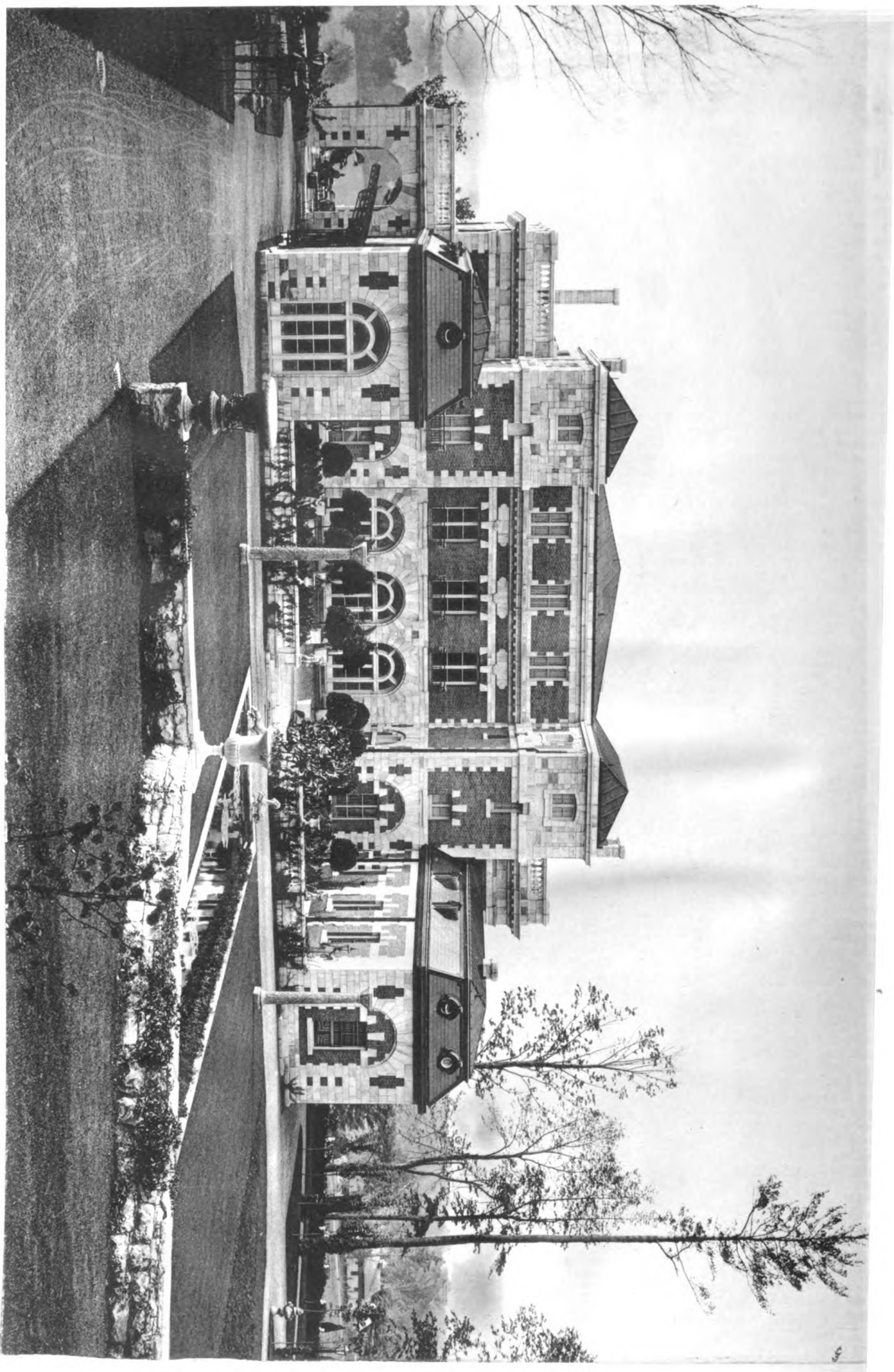
The idea of marking by distinctive tablets houses associated with the names of distinguished men originated with this Society, and has in London been carried successfully into effect. Such historical houses are fast vanishing, and the attempt to rescue them from forgetfulness has been very popular and, it is hoped, useful.

The whole of the work of the Society of Arts has been carried out without any Government aid, or indeed without any endowment. It is practically dependent entirely upon the annual subscriptions of its members. Its present income is about 10,000*l.* a year, and this is expended annually. It has in past years received a certain amount of money by way of legacies, and it possesses trust funds amounting in all to 14,000*l.* Most of these trusts are chargeable with the award of various prizes. It has about 17,000*l.* of its own, unaffected by trusts of any kind, mainly accumulated during the past twenty-five years out of surplus revenue.

The buildings in the Adelphi, which it has occupied since 1775, are not freehold. The original lease expired in 1867. It was renewed for a period of thirty years, which expired in 1897, and the lease was further renewed for a period of seven years, ending in 1904. The accommodation is now hardly sufficient for the needs of the Society. It is especially deficient as regards the requirements of a library, and the want of convenient library accommodation has for many years past been a serious drawback. There is every reason to believe that with ampler premises the operations of the Society might be extended, a greatly increased number of members attained, and consequently larger funds provided, which might be expended in objects of public usefulness. The Society's meeting-room has been largely used by other societies, to whom it has been readily

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Negative by H. H. Siddons.



THE NORTH SIDE: HOUSE OF GIRAUD FOSTER, ESQ., LENOX, MASS.
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lent, and for public meetings for objects cognate to the work and purposes of the Society. — *The Architect and Contract Reporter*.

BOOKS PAPERS

THERE are few architects who have not read the first edition of Professor Moore's book on "*Gothic Architecture*,"¹ and concerned themselves more or less with the discussions which it has called out in the profession; and every one who has read the first edition will be interested in the second, which is, in fact, almost a new book, so completely has it been rewritten, and so greatly has its importance been increased by the addition of new matter, mostly the record of recent personal study, and illustrated by a large number of new drawings. No one could say that the first edition did not show learning and conscientiousness enough; but, as the author was not a practising architect, it was often assumed by his professional critics that he could not possibly know as much about the subject as they, and that his science was probably drawn at second-hand from Viollet-le-Duc or other writers of acknowledged authority. The second edition will certainly silence this sort of criticism, for the new parts of the book, and the revised treatment of the portions already familiar, show a precision and certainty of knowledge of the principles of vaulting in stone, and a familiarity with most of the buildings in which those principles are illustrated, to which few architects can pretend. Even Viollet-le-Duc, notwithstanding his cleverness in divining the intentions of the mediæval builders, and his thorough familiarity with the examples of mediæval work which had come under his care, was far from possessing the knowledge of mediæval construction in England and Italy which Professor Moore has acquired by earnest personal study. We have always thought that Professor Moore went too far in saying that Gothic architecture, according to his definition of the term, was never practised elsewhere than in France. Of course, he is at liberty to define Gothic architecture as something unknown outside of France, if he likes; but, even conceding, as we very willingly do, the merit of the French architects in developing the Gothic system of construction, and even in being the first to devise a system of decoration suited to it, one can hardly say that Cologne, or Exeter, or Gloucester are so devoid of artistic beauty, or of skill, and even originality, in construction, that they should be put outside the pale of a classification which is, in its accepted use, so comprehensive. It is dangerous to argue that everything must be Gothic that is not something else; but it would be hard to give a really satisfactory reason for assigning to any other style such buildings as those just mentioned, together with Westminster, Salisbury, Strasburg, Freiburg, Ulm and many others, which do not all have flying-buttresses, or the lofty clear-stories which made them necessary, but which show in other respects, as, for example, in the construction of spires, which have remained upright where French ones have fallen, a skill and inventiveness very little inferior to those of the French architects of their own time; and it would be still more difficult to justify the exclusion from Gothic architecture of buildings which are known to have been carried out in Spain by French architects during the Gothic period.

However, there is no need of quarrelling with Professor Moore over his definition of names; what we have to learn from him is the development of the particular construction to which he confines his attention, and this he traces in the most interesting and satisfactory manner. The present edition of his work contains a new chapter, on the Sources of Gothic, in which the various forms of Romanesque which preceded Gothic are compared with great learning, and with the skill of one who knows thoroughly the lesson to be derived from the comparison; and the matter added to that contained in the first edition consists to a great extent of confirmations, illustrated by striking and often little-known examples, of the views previously explained. How interesting these views are to the professional architect we need not say. The reader of Viollet-le-Duc will understand how absorbing is the story of the transformation of the Romanesque construction, under the pressure of the necessity for large, light and unencumbered churches, into a system such as no one had ever dreamed of before, surpassingly beautiful, and adorned with sculptured decoration of a type completely novel; and those who have traced it through the great Frenchman's pages will find Professor Moore's version of it not less interesting because of their previous knowledge. Like Viollet-le-Duc, Professor Moore completes his book by a study of Gothic sculpture and colored decoration, treating, however, of German and English work as well as French. Short as they necessarily are, in order to bring them within the compass of a single volume, these chapters are among the most valuable portions of the book. Professor Moore is an accomplished artist, as well as a lifelong student of all forms of art, and what he has to say of Gothic ornament is condensed from great knowledge.

In general appearance, the second edition is a great improvement on the first. The woodcuts of the earlier edition have all been replaced by process-blocks from the drawings of the author or his

daughter, giving greater uniformity to the appearance of the pages, and many new ones have been added; while, to show general effects which could not be rendered in small sketches, ten photogravure plates have been bound into the volume.

We once had a French professor who was accustomed to compliment his classes on the admirable opportunity for improvement which their work showed; and a small, — a very small, merit of this kind might be added to the excellences of what is in some respects the most important architectural work yet published in the United States. It is, naturally, not the author's fault that the proof-reading is not perfect, and, in fact, it is so in regard to English words, but we find the name of the river Aisne, in France, appearing twice as "Ainse," and Hildesheim converted into "Hildersheim"; while we have "Angellico," "Massaccio," and "Niccolà" Pisano, forms of familiar Italian names which may, however, have some authority unknown to us.

THE third edition of Professor Melani's scholarly and convenient little manual of Italian architecture² appears in one volume, instead of two, but improved by many new illustrations and with the text almost completely rewritten. A little space has been gained by leaving out the former matter about the rude and mysterious monuments of Corsica and Sardinia, which have, after all, no architectural character, and this space has been more than filled with new matter of great interest. Professor Melani says that he writes particularly for those outside of the profession, but he does not put them off with information appropriated from ancient text-books; on the contrary, the most recent discoveries are constantly made use of, and he must be a very well-read architect who would not find something in this little book that he did not know before. Taking, for example, the time-honored legend about the connection of Giotto with the Campanile of the Cathedral of Florence, in regard to which we have been told so many pretty tales, how Giotto devoted his life to what should be ever after known as his tower; how he made a wooden model of it, drawing and coloring every block of marble in the facing, and so on, Professor Melani tells us that, according to the unimpeachable testimony of contemporary documents, Giotto was chosen architect of the cathedral works in the year 1334; and in the same year the foundations of the Campanile were laid, undoubtedly from his plans. Two years afterwards, Giotto died, and was succeeded as architect by Andrea da Pontedera, who directed the work on the Campanile from 1337 to 1348. In 1348 the plague devastated Florence, and it is not known whether the Cathedral work was suspended, or whether an architect whose name has not come down to us was employed for a short time; but about 1350 a certain Francesco Talenti, a native of Nipozzano, near Pontassieve, who had formerly worked as a sculptor on the Cathedral of Orvieto, was elected architect of the Cathedral of Florence and the buildings connected with it. Under Francesco Talenti, the Campanile and the exterior of the Cathedral were given the forms in which we now see them, and he had a very important part, if not the principal one, in designing them. Francesco had a son, Simone Talenti, who, after a short interval, in which the supreme direction was assumed by Giovanni di Lapo Ghini, who had been associated with Francesco Talenti in the work on the Cathedral, succeeded his father as architect. He was assisted by Benci di Cione, and these two, as Professor Melani tells us, designed and carried out the Loggia della Signoria, or the Loggia dei Lanzi, to call it by its later name, which is generally attributed to Orcagna, but was not begun until eight years after Orcagna's death.

It will be seen that our author is too conscientious, and respects too much art and artists, to allow even non-professional readers to continue in errors which he has the means of correcting, and the same conscientiousness and knowledge is very advantageously displayed in his choice of subjects, and the number and excellence of the illustrations by which they are explained. Even architects who do not read Italian will find in the illustrations of the little book, which, it may be observed, can be imported, free of duty, by mail, at a very trifling expense, a useful compendium of examples of Italian architecture, ancient and modern, while those who can understand its text will find it full of interesting history and judicious comment.

SOCIETIES

PHILADELPHIA T-SQUARE CLUB.

RESOLUTIONS adopted by the T-Square Club of Philadelphia at a special meeting held Saturday, November 18, 1899.

Whereas, God in His wisdom has taken from us our respected and beloved associate, Adolfo C. Muñoz; therefore

Be it resolved, That the members of the T-Square Club express to his family their heartfelt sympathy in this affliction.

We deeply mourn his loss as officer of the Club, as one of its active supporters and as a man of marked ability in his profession. His steady adherence to the highest ideals and his fidelity of purpose stand as a permanent inspiration to us and for him as a noble memorial, and further

Be it resolved, That a copy of these resolutions be sent to his family and to the architectural publications of the country.

¹ "*Development and Character of Gothic Architecture*." By Charles Herbert Moore. Second Edition, rewritten and enlarged. New York: The Macmillan Company. 1899. \$4.50.

² "*Manuale di Architettura Italiana Antica e Moderna*." Di Alfredo Melani. Terza Edizione rifatta, con 131 incisioni e 70 tavole. Published by U. Hoepli, Milan. 6 francs.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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HOUSE OF ARTHUR REITH, ESQ., WASHINGTON, D. C. MR. WADDY B. WOOD, ARCHITECT, WASHINGTON, D. C.

THIS house, which cost \$10,000, is built of a dark-red "Colonial" brick laid in Flemish bond, with terra-cotta window arches. The porch is of wood, however.

[The following named illustration may be found by reference to our advertising pages.]

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TOWN-GATE, STRALSUND, GERMANY.

WITZENDORFSCHES HOUSE, LÜNEBURG, GERMANY.

ST. KATHERINE'S CHURCH, LÜBECK, GERMANY.



COUNSEL FOR BOTH SIDES. — Writing from conviction and writing for cash produce different results in the case of the same writer. This was strikingly exemplified in years gone by when the first water-works system was put in at Bangor, Me. There was a fierce political fight over its installation, and when it was at its height the paper opposing the project published an article attacking the company. It was written in a very caustic vein; it handled the subject skilfully and without gloves; and, what was very telling, brought a bristling array of facts into play in opposition to the company's main contentions, and played the mischief generally with the company's prospects of carrying the bill through. It was a very damaging article, and the water-company looked about for some one to reply to it. They finally decided on an exceedingly clever lawyer of pronounced Bohemian proclivities. He accepted and turned in an article in reply, for which he received \$100. It was very well done, but after it had been published the president of the water-company sent for the writer and said: "Mr. — I don't want you to think I am finding fault with your article, but I do not think it reads quite as well or is as strong as the one it was written to answer." "No," replied the truthful lawyer, "I don't think it does myself. I did my best, but, you see, I wrote one from conviction and the other for cash!" — *Fire and Water*.

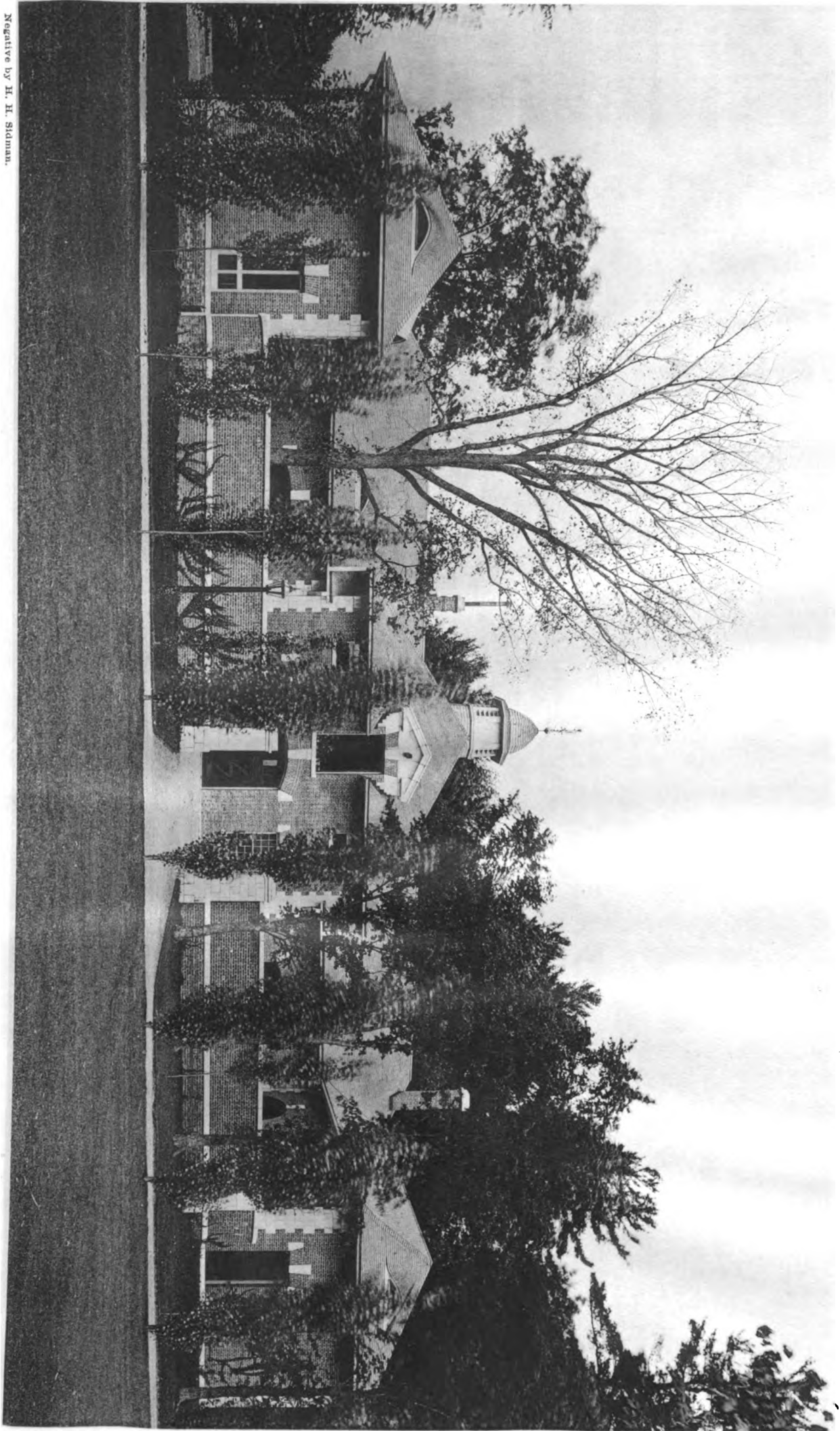
A CHURCH BARREL-ORGAN. — F. G. Edwards has unearthed a church barrel organ, still in full working order, at Trotterscliffe, near Rochester, a church mentioned in Domesday, and possibly dating back to Offa, King of Mercia. Barrel-organs were in common use in English churches sixty years ago, and it is likely that the present machine, which Mr. Edwards describes in the forthcoming issue of *The Musical Times*, is not quite unique. It has six stops and six barrels, grinding sixty tunes in all, among them such archaic specimens as "Job" and "Old 11th," and it is operated by the sexton. — *London News*.

A PHENOMENON OF LAKE TITICACA. — A curious phenomenon is that metal never rusts in the waters of Lake Titicaca. You can throw in a chain or an anchor or any article of ordinary iron, and let it lie for weeks, and when you haul it up, it will be as clean and bright as when it came from the foundry. And, what is stranger still, rust that has been formed upon metallic objects elsewhere will peel off when immersed in its waters. This is frequently noticed by railway and steamship men. Rusty car-wheels and rails, and even machinery, can be brightened by soaking them in the waters of Lake Titicaca. — *Bolivia Correspondence Chicago Record*.

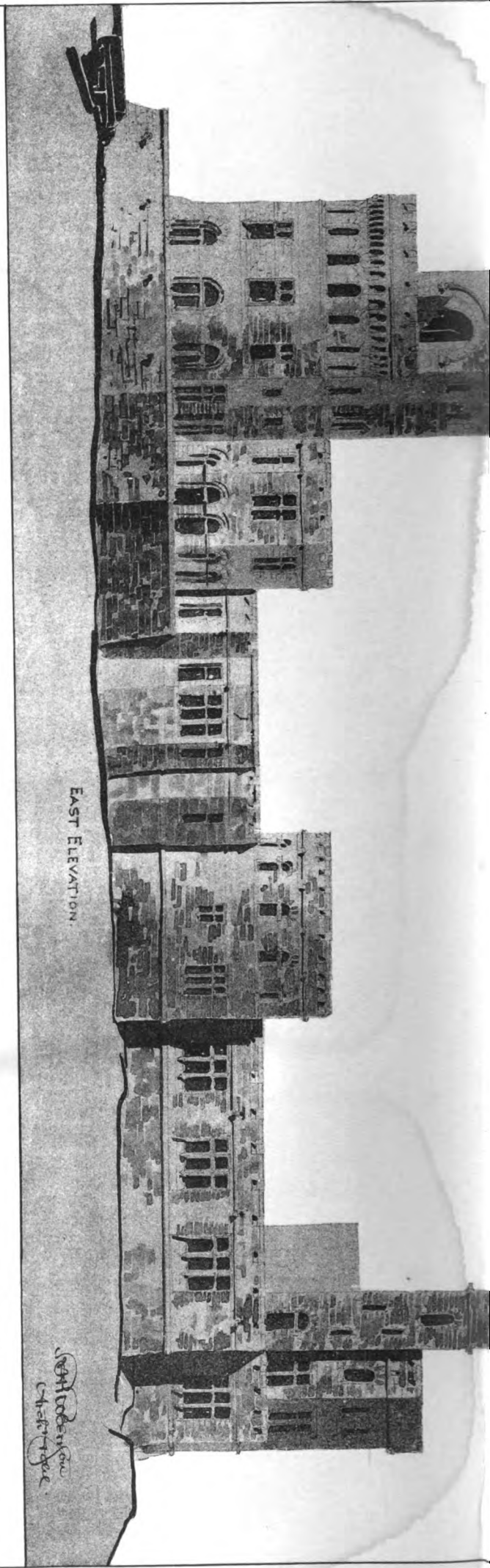
A GRAVEYARD OF PREHISTORIC DWARFS. — Workmen terracing King Hill, an old landmark of Northwestern Missouri, which is to be converted into a residence suburb of St. Joseph, have unearthed a prehistoric cemetery. The remains of a race of dwarfs, not allied with any tribe known to have inhabited this territory and unaccounted for by Indian legendary, repose on the summit of King Hill. A feature remarkable in itself and especially marked in connection with the dwarfish remnants of prehistoric man found in this summit is the discovery of human bones, evidently those of a giant, probably more than seven feet tall, and big-boned. Low, flat heads, with small intelligence and marked animal propensities, characterized this people. Heavy jaws and strong, well-preserved teeth carry the records of their lives forward. Brutes, human but inhumane, self-reliant, they were savages of a lower order than any we know to-day. Yet they honored their dead. Shells such as are found on the banks of many inland streams, plentiful on the sand-bars of the Missouri, overlooked by King Hill, and stones of unusual hues, worthless in the commercial marts of to-day, the playthings of children, were deposited in the graves. — *Correspondence Chicago Record, October 17*.

THE SOLIDIFICATION OF HYDROGEN. — A paper on this subject by Professor Dewar, F. R. S., was read by Sir William Crookes, before the Chemical Section at the last annual meeting of the British Association. Professor Dewar has experimented on the solidification of hydrogen since last autumn, when he was able to produce the liquid gas on a scale of 100 or 200 cubic centimetres. The hydrogen was placed in a small vacuum-jacketed test-tube, surrounded by a wider similar tube. But even with evaporation under a pressure of 10 millimetres of mercury, no solidification was realized—owing to over-cooling, as was afterwards recognized. During this year various electric-resistance thermometers and thermo-couples of platinum-rhodium were experimented with, and it was observed that the exhaustion of the liquid hydrogen lowered the temperature only by 1.5 degree centigrade, and indicated a boiling-point of —245 degrees, while the temperature reduction by evaporation ought to have amounted to 5 degrees, and the boiling-point to be —252 or —253 degrees centigrade. The reason was that a slight leak of air could not be avoided with the silk-covered wires passing through the rubber stoppers, which turn stone-hard at the low temperatures, while the cement cracks in all directions. The incoming air was apparently frozen into a frothy foam when the pressure fell below 60 millimetres. This mass was first believed to be a sponge of solid air containing liquid hydrogen, just as solid air is a magma of solid nitrogen and liquid oxygen; but it was really solid hydrogen. The solidification was then accomplished in the following apparatus. From a glass bulb, capacity one litre, containing pure dry hydrogen, a bent tube, calibrated at its lower end, passes down into a vacuum-jacketed tube. When the pressure was reduced in the latter, liquid hydrogen began to collect, until at a pressure of 30 or 40 millimetres the hydrogen suddenly turned into a white foam-like mass. It was attempted to let any still liquid part run out from the frothy ice by inverting the whole apparatus, but it was all solid. The electric thermometers fail at these temperatures. By means of two constant-volume hydrogen thermometers, containing hydrogen under pressures of 269.8 and 127 millimetres, the melting-point of hydrogen has been fixed at 16 or 17 degrees absolute, and the critical temperature at 30 or 32 degrees; so that, as in the case of nitrogen, the melting-point temperature is about half the critical temperature. The frothy appearance is due to constant ebullition of the liquid. From optical observations, the maximum density of the liquid would be .086, and the density of liquid hydrogen at its boiling-point, .07. The paper concludes: "The last doubt as to the possibility of solid hydrogen having a metallic character has been removed, and for the future hydrogen must be classed among the non-metallic elements." Apart from the fundamental importance of low-temperature research, on which Professor Dewar did not dilate in this paper, the non-metallic character of hydrogen is the most significant feature. In the discussion, which took more the shape of a vote of thanks to the absent author, Dr. L. Mond and Dr. Gladstone emphasized the dangerous character of this work, which apparently brings us within 16 degrees of the absolute zero of temperature. The danger, as Sir William Crookes further explained, comes in with the air leakage, which clogs up the tube with solid air, and forms a highly explosive vapor. As the dry hydrogen, which is generated from the purest sulphuric acid and zinc, rushes down the narrow tube, electric sparks are produced, and extremely violent explosions have occurred, about which Professor Dewar did not say a word. Dr. Horace Brown added that Professor Dewar had just succeeded in liquefying helium, so that all our gases have succumbed to pressure or cold. — *Engineering*.

Negative by H. H. Sidman.

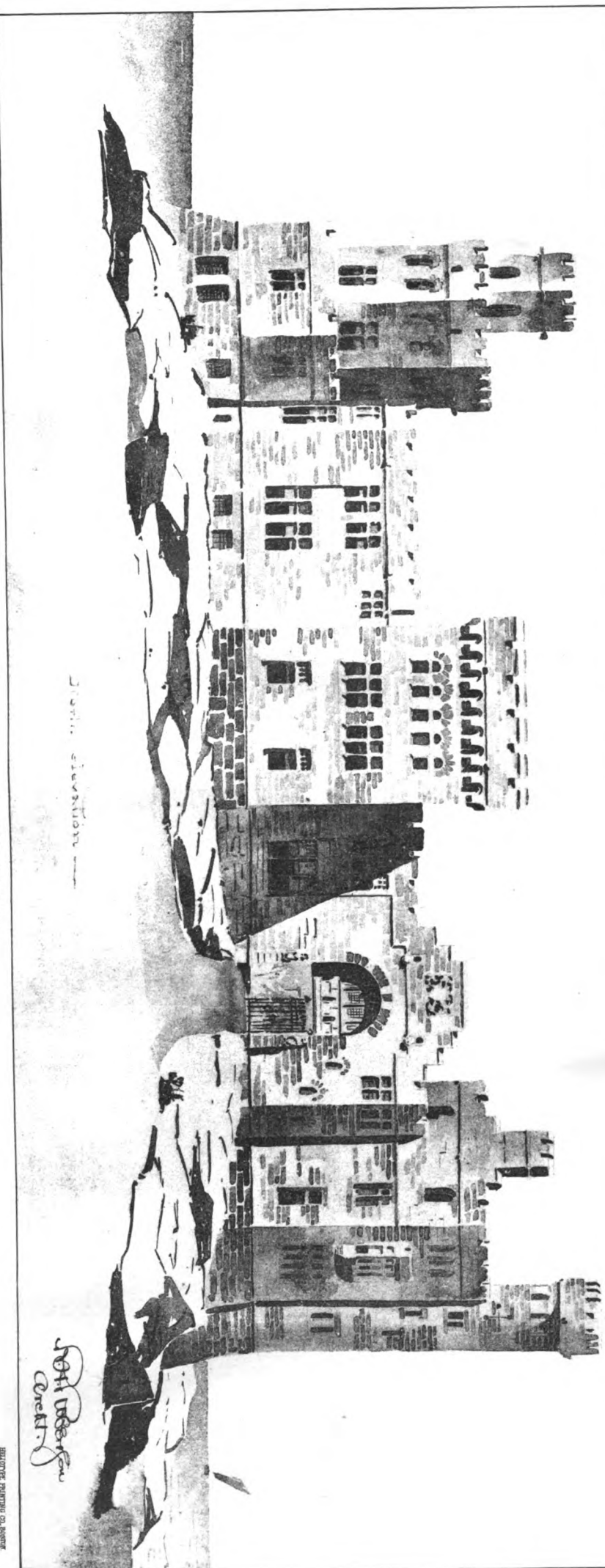


THE STABLES: ESTATE OF GIRAUD FOSTER, ESQ., LENOX, MASS.
CARRÈRE & HASTINGS, ARCHITECTS.



EAST ELEVATION.

R.H. Robertson
Architect



NORTH ELEVATION.

R.H. Robertson
Architect

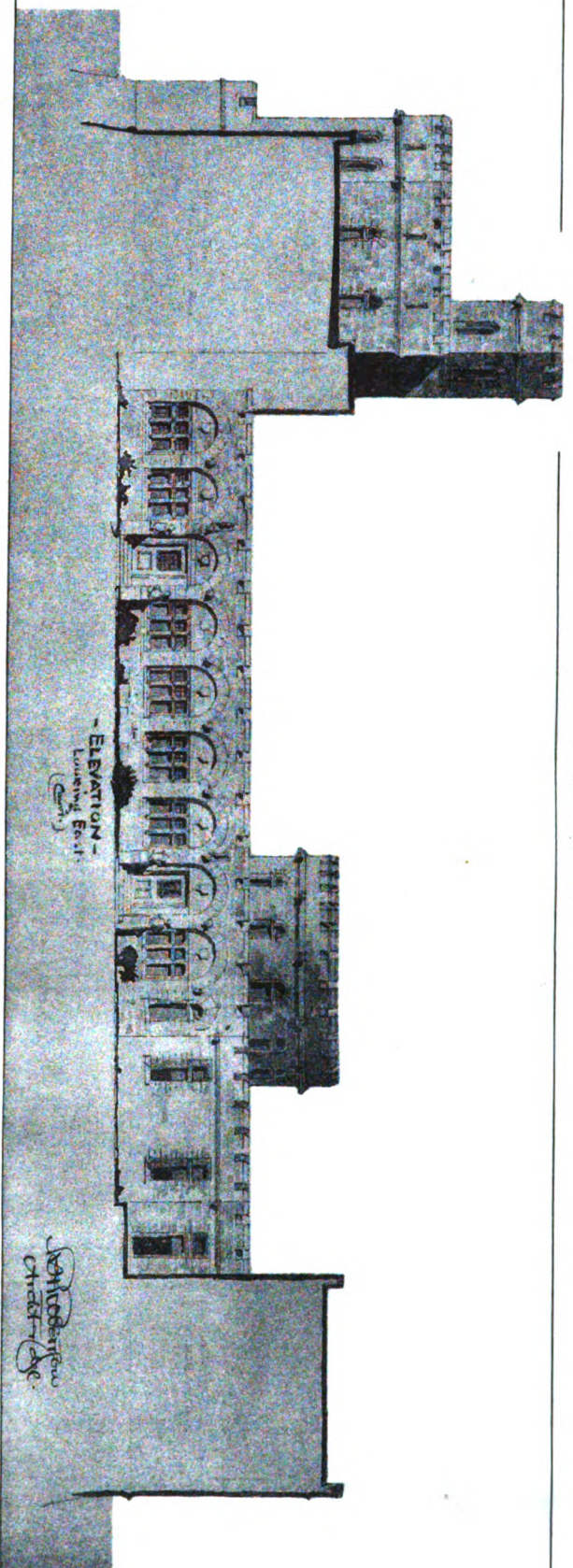
"THE HOUSE ON THE ROCKS."
R. H. ROBERTSON, ARCHITECT.

EMERSON ARCHITECT AND BUILDING DEWS.

DEC. 2, 1899.

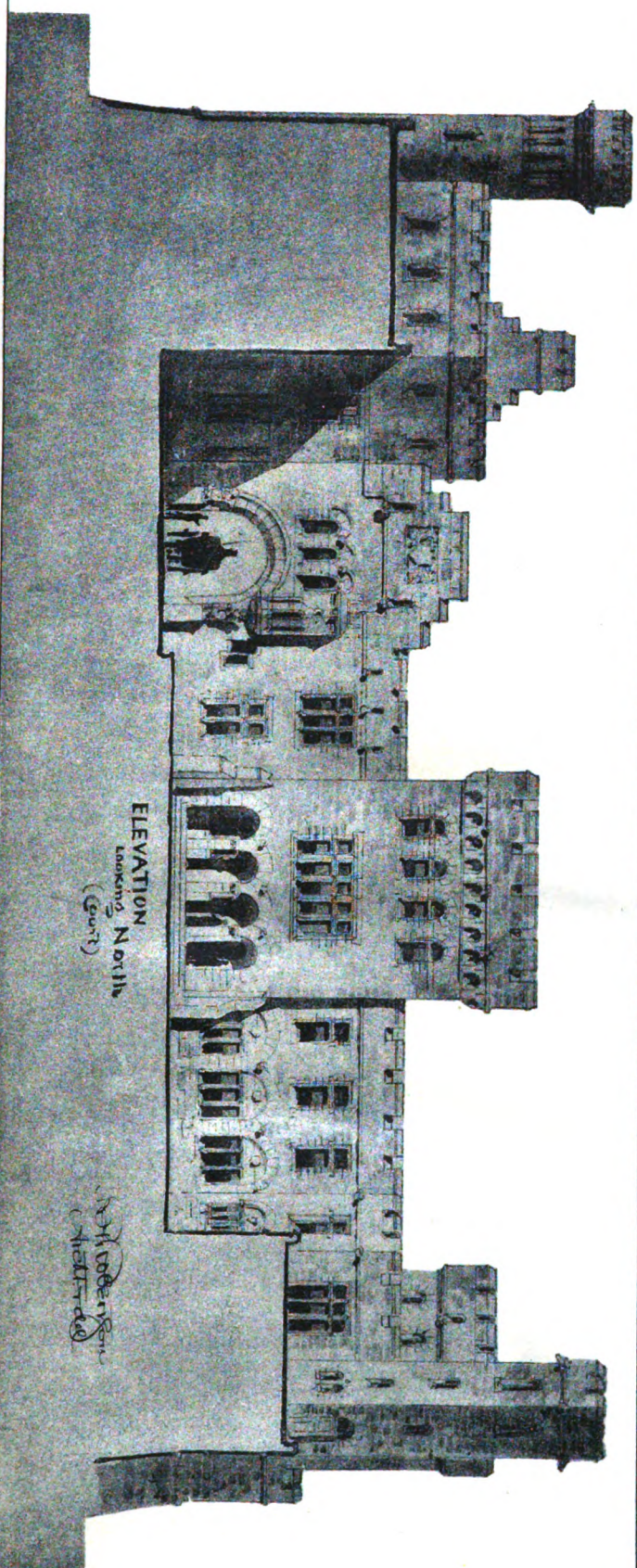
No. 1249.

CONSENT 1899 BY THE AMERICAN ARCHITECT AND BUILDING NEWS CO.



ELEVATION -
Looking East

J. H. Woodson
Architect



ELEVATION
Looking North
(Court)

J. H. Woodson
Architect

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. LXVI.

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DECEMBER 2, 1899.



SUMMARY:—

The Suggested Remodelling of the White House.—The Building a National Monument, not the Private Property of the Present Incumbent.—Enlarging the Area of New York by Filling-in the East River.—How the present River Traffic can be provided for.—The vast Profit derivable from the Operation.—The Parting of M. Emile Benard and his Fellow Architects.—The French and American Methods of Felicitating a Prize-winner.—Deaths of Sir Arthur Blomfield and Sir Thomas N. Deane, Architects.—A new Membranous Pump.—A new Form of Parallel-ruler.	73
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IT seems to us that there has already been too much amateur tinkering with the White House, at Washington, and that the question of enlarging it, as certainly seems to be desirable, should be taken up by the next Congress, and solved, as other questions relating to the public buildings of the United States are, with competent expert assistance. Next to the Capitol, the Executive Mansion is, theoretically, the most important building in Washington. There the President resides; there he holds the Cabinet meetings where the policy of the United States is decided; from that building issue, primarily, his orders as Commander-in-Chief of the Army and Navy of the United States; there are received the ambassadors of foreign nations, and in its rooms take place the entertainments which the head of a nation of seventy million people offers to the representatives of other great nations. Such a building, however quiet and unpretentious it may be, should be spacious enough to avoid crowding and annoyance to the advisers and guests of the President, and it should certainly be worthy, by its beauty and refinement, to represent the noble thoughts of courtesy and consideration for all men on which our Republic is founded.

THE present White House, by its simple and elegant Classicism, as well as by the unrivalled beauty of its situation, comes very near fulfilling the ideal of the one palace of a great Republic; but it is too small for its purpose, and for the last ten years it has been the object, so to speak, of a succession of artistic assaults which make the judicious grieve, not so much, perhaps, on account of the danger of the adoption of any of the extraordinary schemes which have been successively brought forward in the newspapers, as from the impression that they give that, while private owners of even moderate means would not think of building or altering a house without the assistance and advice of a trained architect, the Executive Mansion of the United States is abandoned to the tender mercies of any President's wife who happens to have "a natural taste for architecture," and who can get an official who has graduated from an evening school to "draw out" her ideas. The most recent of these volunteer schemes for altering the building, which has the merit of being less offensive and ridiculous than most, but is the more dangerous on that account, is credited in the newspapers to the Superintendent of Public Buildings, who has worked, we are told, under the direction of the President, and has evolved a plan for the addition of wings to each end of the present building, retaining the same style, and avoiding the semicircular colonnades, and similar architectural finery, which have adorned most previous designs. The published

sketch shows, however, an ambitious entrance in the middle of one of the wings, destroying the symmetry of the front, and giving it the air of a city block, and this violation of the first principles of architectural composition in the façade does not encourage favorable anticipations as to the designing of the interior. Such as it is, however, the Superintendent's plan will, we are told, be presented to Congress at the coming session, supported by the influence of Senator Cullom, and, as the cost of making the change is estimated at only two hundred and fifty thousand dollars, there is said to be a serious probability that it may be adopted, and those who wish to see the public architecture of the United States represent the highest skill of the best architects of the country should lose no time in making their opinion of it known.

IN the first place, with all due respect to our excellent President, who has the example of many of his predecessors to justify him, it seems to us that the occupant of the Executive Mansion should be the last person to make plans for altering it. He may, with perfect propriety, call the attention of Congress to its defects, for the benefit of his successors, but there is to us, and, as we believe, to most people, something unpleasant in the idea that a President, elected by his fellow-citizens to fill for four years the highest office in the United States, and occupying, as an important incident of his position, a public building, should treat the building as if it were his private property, making plans for altering it to suit himself, and expecting Congress to supply the money for the work. Kings treat their palaces in this way, it is true, but, in theory, the palace is always the private property of the King, and he is not in any sense, as a President is, the temporary occupant of a building belonging to people whose rights and feelings he is peculiarly bound to respect. That the Executive Mansion should be enlarged we willingly grant, but, when the enlargement is made, let it be done publicly and generously, with careful consideration and under the best advice, remembering that volunteered expert suggestions are generally worth what they cost, and no more, and that the White House is, in many respects, the most important of the national buildings.

A SUGGESTION, which is, we think, not altogether new, has recently been made in New York, with more reason than ever. Just now, it is intended to build at least one new bridge, and a tunnel, to connect New York and Brooklyn, at a cost, probably, including the approaches, of at least twelve million dollars each. The bridge is to be built by the taxpayers, while the tunnel is to be made by private enterprise, but in either case it is certain that the citizens of New York and Brooklyn will pay the interest on the cost. One does not, or at least, one should not, set about spending twenty-four million dollars without a good deal of consideration; and one of the first things that occurs to a disinterested person, looking at the map, is that a great deal of money has already been spent, and seems likely to be spent, solely out of deference to an ancient superstition that the navigation of the East River is worth preserving. An ordinary man, before he spent twenty-four million dollars, or twenty-four dollars, to preserve an old pathway across his land, would ask himself whether some other route could not be found over his estate which would be equally convenient for his neighbors, and would save him unnecessary expense; and, in the case of New York, there are obvious ways in which the use of the East River could be discontinued, without disadvantage, and, in many instances, with positive advantage.

SO far as its water-front is concerned, the East River, above Thirty-fourth Street, is practically worthless, the rapid currents and the character of the shore making it impracticable to manœuvre vessels there; and the only thing to be considered is the through traffic. Of this there is now considerable, as the Sound steamers, the transfer-boats from Mott-Haven, and some small coasting-vessels, pass through it, on their way to a safe landing-place on the west side of the city, or on the Jersey shore; but the completion of the Hudson River tunnels and bridge will put an end to transfer of cars by boat, and it has long been questionable whether the Sound steamers would not find it desirable to land at the upper part

of the city, and save the long trip around the Battery to their North River piers. One advantage of the North River terminus for the route of these boats has been that passengers for the West and South could be easily transferred to Jersey City; but, with the completion of the Hudson River tunnels, it is altogether likely that the trains for Philadelphia and Washington, as well as those for Albany and Boston, will start from a common station, probably in the neighborhood of the Harlem River, so that this will become the natural terminus for the Sound lines. The coasting trade which now passes through the East River, or which will pass through it after railroad communication is opened between the New Jersey shore and New York, is of very slight importance, and such portion of it as could not use, instead, the route through the new channel of the Harlem River may safely be neglected.

WITH the navigation of the East River otherwise provided for, as seems to be entirely feasible, there would be nothing to prevent establishing communication between New York and Brooklyn by filling-in the channel, instead of bridging or tunnelling it, and the advantages of doing so would be enormous. Experience has shown that ordinary people dislike tunnels, and the growth of Brooklyn would be far more effectually promoted by half a dozen surface lines of electric-railway to New York than by a single tunnel line, while the area thus added to the most crowded part of the city would be of immense value. It may be roughly estimated that the net profit from the sale of the land alone, after filling-in the least valuable part of the East River and laying-out streets, would be from ten to fifteen million dollars, as contrasted with an outlay of twenty-four millions for incomparably inferior means of uniting the two boroughs; but this is by no means all of the advantage which skilful management of the undertaking might secure to the two cities. The water-front on each side of the connecting-tract of new-made land would afford an admirable opportunity for the construction of docks, accessible to all the railways entering New York. The northern docks would serve the Sound lines and, perhaps, some of the Hudson River local traffic, while the Southern ones would be available for Transatlantic steamers, greatly increasing the water-front suitable for this purpose.

A GOOD example of the way in which architects are encouraged, and an artistic atmosphere maintained around them, in France, is to be found in the farewell reception given in Paris to M. Emile Benard, the winner of the "Berkeley" competition for the buildings of the University of California, before his departure for the scene of his labors. The invitations to this reception were sent out in the name of MM. Daumet, Vaudremer, Guadet, Pascal, Moyaux, and Scellier de Gisors, as representing the School of Fine-Arts, and many of the most eminent architects in France responded to it. M. Georges Leygues, Minister of Fine-Arts, presided, and beside him sat M. Larroumet, the former Minister, M. Normand, Member of the Institute, and other high officials. M. Guadet described the competition, with warm thanks to the American architects for their part in it, and M. Pascal proposed the health of M. Benard. Then the Minister of Fine-Arts rose, and, after congratulating M. Benard in the name of the Republic, said that the President had entrusted to him, for M. Benard, the cross of the Legion of Honor, which he thereupon presented to him. After other evidences of esteem and affection, the party separated, leaving M. Benard to complete his preparations for removal to his new home, where, we are sure, he will be heartily welcomed by the members of his own profession.

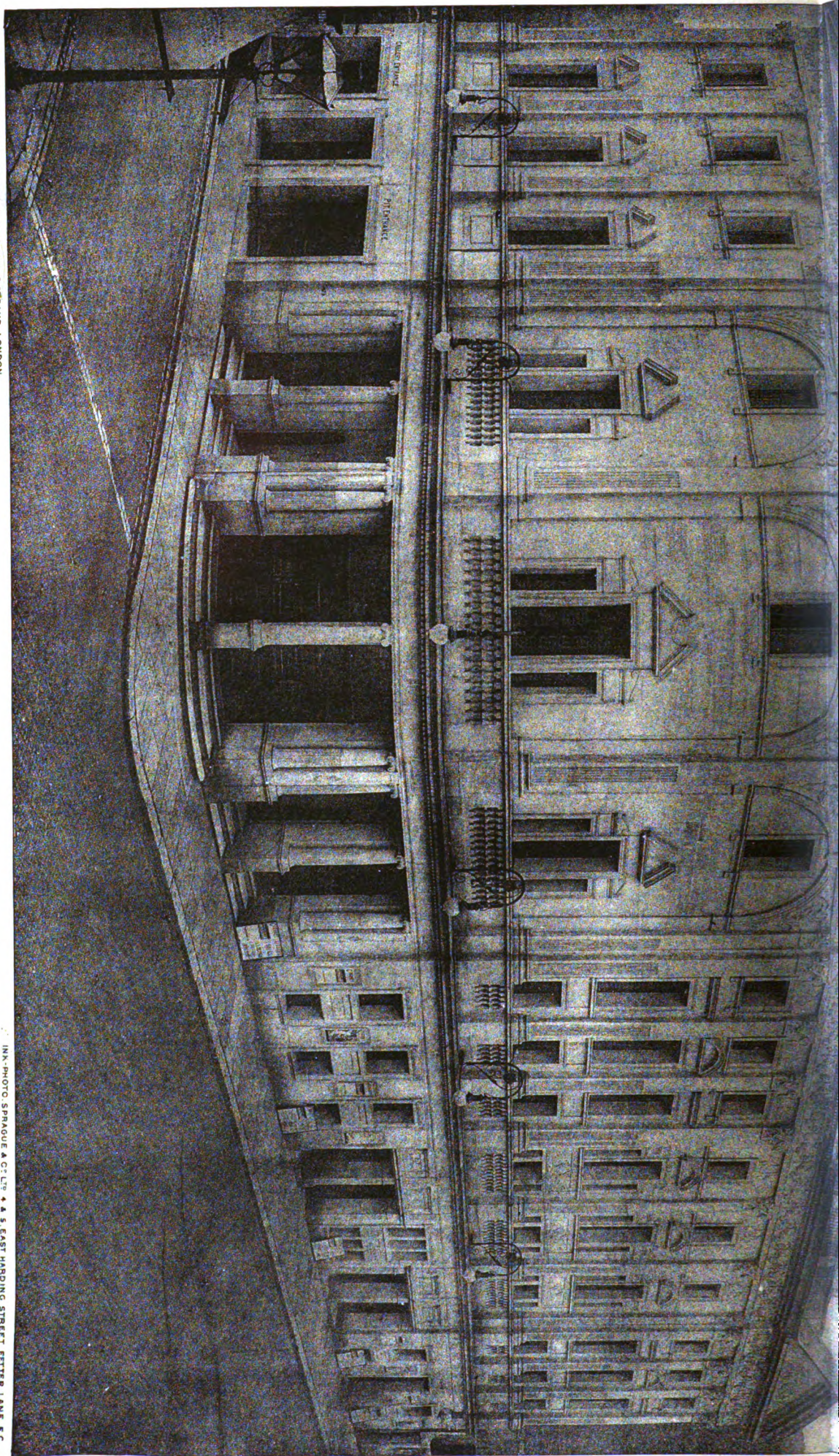
WHAT an instructive contrast is to be observed between these proceedings and those which follow a great competition in this country! It must be remembered that many of those who assembled to congratulate M. Benard were his rivals in the competition in which he carried off the prize, yet they cheered him, apparently, as heartily as the rest, and parted from him, as the account tells us, "with brotherly embraces." This is the French way. The American way we have recently seen. An architect, highly trained, and already distinguished, honorable and popular in the profession, wins fairly a great Government competition. Does the Government send its high officials to congratulate him, and to offer him public honors? No; on the contrary, the highest official within

reach crawls around, — there is no other name for it, — to try to deprive the honorable winner of his "job" by fair means or foul, by wire-pulling, influence and misrepresentation; while, from some of his professional brethren, and rivals in the competition, instead of receiving "brotherly embraces," he is treated to a "protest," with far too many names upon it, against the award. We presume that architects generally in this country have made their comments on the New York Custom-house affair, and we will not add any; but it may be observed, for the benefit of those who look to the *École des Beaux-Arts* for the revelation which is to inspire new life into American architecture, that when American architects treat each other as the Frenchmen do, and not till then, there will be some chance of creating here the "artistic atmosphere" which does so much for architects and architecture in France.

THE profession in Great Britain mourns the loss of two architects of great and deserved distinction. Sir Arthur Blomfield was the son of a popular and beloved Bishop of the Church of England, and entered professional life with a natural predilection for the style with which the interest of his family and friends had been particularly associated. He studied English Gothic, however, with trained taste, as well as scientific knowledge, and the work which he afterwards carried out in the style was always remarkable for its pure and interesting design, as well as for the skill with which it was adapted to modern purposes. His professional work, with his amiable personal character, brought him distinguished honors. He was an Associate of the Royal Academy, and Vice-President of the Royal Institute of British Architects, and received the Institute Gold Medal in 1891. Sir Thomas N. Deane, no less distinguished in his way, was an Irishman, having been born in Cork in 1828. His father and grandfather were also architects of distinction.

A NEW sort of pump, which promises excellent results, is made in Berlin by Max Brandenburg. In this pump there is no cylinder and no piston; there are no sliding parts, and consequently no friction, no steam or vapor of any kind is used, and any kind of mud, sand or gravel, mixed with water enough to make it flow, can be pumped through it without inconvenience. The principle of the pump is simply that of the common bellows, a partial vacuum being produced, by the extension of a flexible membrane, in a receptacle closed by a valve, and communicating with the liquid to be moved, and the liquid thus drawn into the receptacle being expelled through another valve by the compression of the membrane. In the Brandenburg pump, the membrane takes the form of a diaphragm of Para rubber, which is stretched across the receiver of the pump, and actuated by a rod, moved either by hand or by power of any sort, and the whole construction is extremely simple, every part being readily accessible for replacing in case of wear. The pump, as made in Berlin, will lift from a depth of twenty-three feet, and it is claimed that one man can raise, with the patterns adapted to hand labor, four hundred and fifty gallons an hour from a depth of thirteen feet.

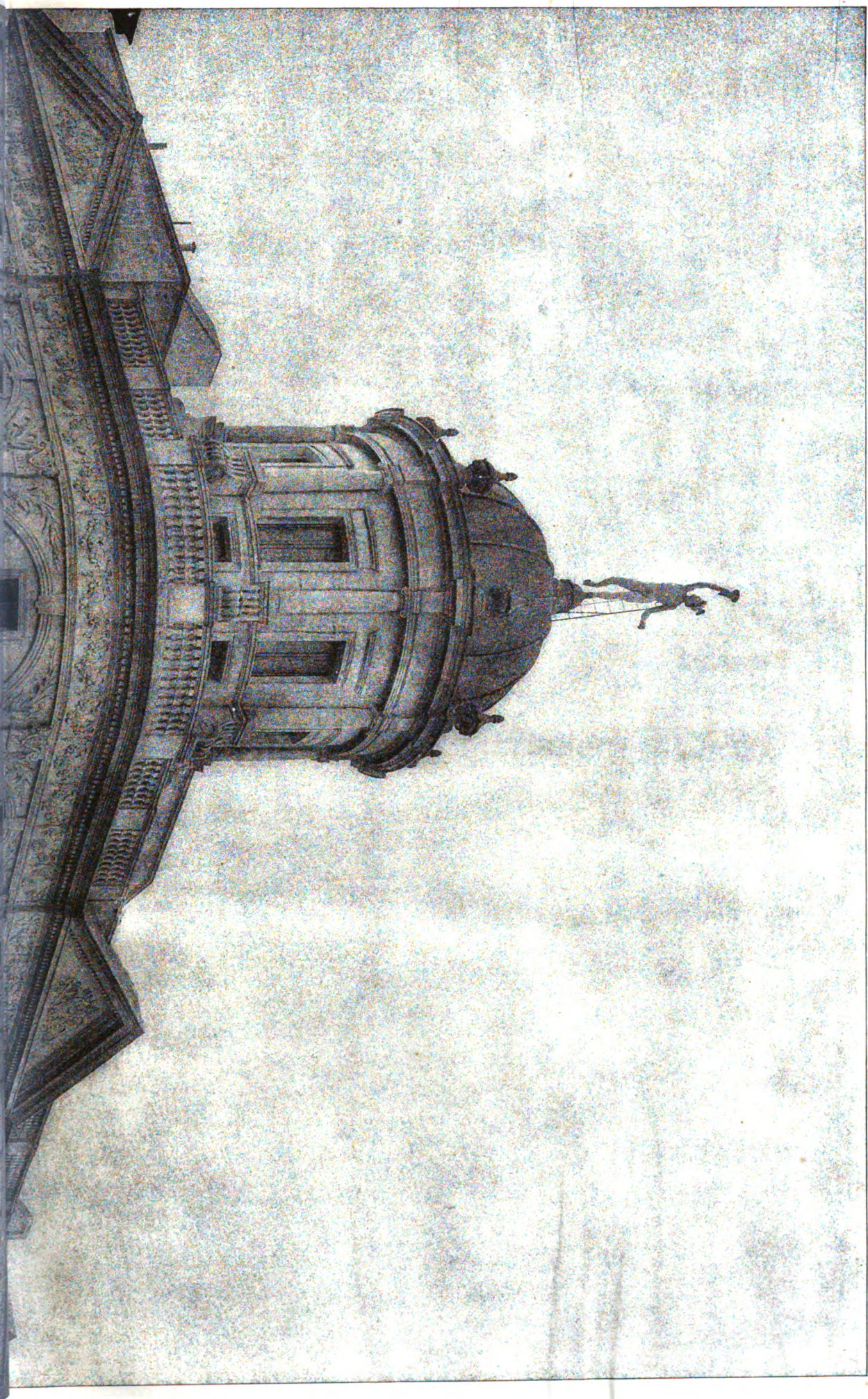
A SIMPLE contrivance for ruling parallel lines near together has been patented in Germany. Taking a given forty-five degree triangle, a piece of thin wood, a little thicker than the triangle, is cut into a shape nearly octagonal, but with the diagonal faces varying a little in length, the whole being of such a size that it will fit in the inner opening of the forty-five-degree triangle, with a little space to spare. The width of this space, between the inner hypotenuse of the triangle and any given side of the octagon, is the measure of the spacing of the lines to be ruled. To use the device, a T-square is placed on the drawing-board in the usual way, the triangle, or "set-square," adjusted to the T-square, and the octagonal piece of wood put into the triangle. Holding the octagon with the little finger, the hypotenuse of the triangle is pushed up against it, along the edge of the T-square, and a line is ruled. The triangle is then held still while the octagon is slid along until it comes in contact with the vertical side. Holding it there, the triangle is again shifted until the hypotenuse comes a second time into contact with the octagon, and another line is then ruled. Repeating this operation, a succession of lines, equally spaced, can be ruled at an angle of forty-five degrees with the T-square, and the spacing may be changed at pleasure by turning the octagon.



FROM A PHOTOGRAPH BY J. BULBECK & CO., 166-8 STRAND, LONDON.

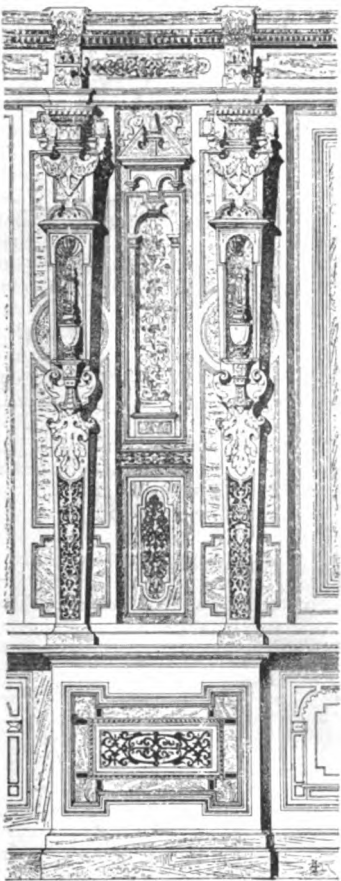
IN A PHOTO SPRAGUE & CO. LTD. & S. EAST HANDING STREET, FETTER LANE, E.C.

CORONET THEATRE, NOTTING HILL GATE, W.
W. G. R. SPRAGUE, Architect.



AMERICAN ARCHITECT AND BUILDING NEWS Dec 5, 1888 No 1549

DECORATIONS IN WASHINGTON AND CHICAGO.



Wainscoting in the Fursteneckzimmer, Frankfurt-on-the-Main.

FROM the interior decoration of a dugout to the painting of a palace is not such a far cry as one might think. Our indiscretions sometimes serve us well when our deep plots,—well, it is dangerous this trying too hard. The simple is a deal the safer, because the complicated requires genius, and the flowering of genius keeps the calendar of the century-plant. A habitation excavated in the slope of a clay bank presents an interior surface like that of the Sistine Chapel, a proper surface for any angels to decorate. The illustrated papers reach the dugout earlier than cheap wall-paper, and their pages stick to the plain clay surface without fear of damp in that dry land. Some are satisfied to paste up the sheets as they come to hand, upright or topsyturvy, but others cut out and properly arrange the prints. There is taste even on the plains. Stepping in from the glaring sunshine to these interiors of silvery surfaces, white and grayish black, is always restful. If one could only say as much for parts of the Congressional Library, or the Chicago Public Library, our story would be shorter. The irritating noise of some costly painting shames an empty cart on a cobblestone pavement. I am saying this because, in general, the efforts put forth in these buildings are cause for congratulation and a pleasure to see. Wherein they sadly fail is matter for study. The public, not able to discriminate, grumbles needlessly, though, possibly, justifiably. It is, after all, the public that must be pleased, and they have a right to dislike poison-spots. Are we, all things considered, able to produce a really fine, elaborate decoration?

A friend who collected colored prints, the sort published in English Christmas papers, pasted them judiciously all over an ample screen and then varnished the surface. The confusion was not as bad as a crazy-quilt, and when the varnish mellowed, the warm tone quieted and united all colors. Some one suggests that time will tone the exuberance of the great reading-room of the Chicago Library. No doubt, as one of the products of Illinois is soft coal, and soft-coal smoke will tone all things, including our shirt fronts. This calls to mind the directions for painting in oils printed for amateurs: mix blue and red and a little black, or any other colors and a little black,—always that little black. Old Father Time is quite an amateur, and can't get the black little enough, in Chicago. Oh, yes, he smokes, of course! But sincerely this is the only room in this library to find fault with. The greater part is excellent. We have done it well in some of the New York buildings, even in hotels, and it is a great exemplification of our civilization—this decorating a tavern and doing it finely. But here again, the high climb risks the fatal tumble. There is a lobby opposite the park-entrance that pants with fever; probably the workmen tried too hard and got overheated. This large public room has a ponderous, elaborate ceiling and much rich color, but no fine tone, only painful effort. One asks, must all painting be put on the market raw, as tomatoes are, and must we wait for the ripening? Perchance it will be the other R. that will come to it. Must the painter be a patriot and work for posterity? And what if posterity will none of it and proceed to scrape off the faded deeds of their fathers?

Work done by trained artists seems to be beautiful and to endure. There are panels in Washington that call for no criticism that are truly beautiful; but the painted decoration degrades its good companionship. Most of that in Chicago is better than its grander competitor can boast of; and well it may be, because it was executed by one of the most important houses in New York, who employed their own workmen, and they seem to have been Englishmen. So then, to New York belongs the praise and the blame. Skilled workmen are not artists always, but the sins "over there" are less numerous than with us. They are raising up a mass of young students in the art academies, men who dream of the "R. A." eventually to grow to their names, but who can never get that appendix, and these are becoming skilled workers in applied arts, and usually have cultivated tastes. No doubt, we are doing the same, but it is to be doubted whether we are teaching in our academies the

nature of pigments and refined harmony in colors. Good taste above all else is the requirement. Let us hope that the folded wings of the army of aspirants will enclose a cultivated taste.

At the Congressional Library, standing in the centre of that really noble and beautiful stair-hall, one sees in the cloisters an upper and a lower series of vaultings and arches. Both are painted in panels by our best artists, and these are held together by conventional designs; those above excessively elaborate and done in oil-paint; those below in mosaic and rather simple in pattern. No doubt, all the conventional work is the performance of journeymen. Looking up through the framing of white marble and past the cool, tender mosaics, the eye is shocked. The designs are blue and green, buff and red (as are the mosaics), but heavy, ill-judged and offensive. Regarding any one of them, say Benson's panels in the south corridor, one sees beautiful cool, silvery, fresh-colored paintings and surroundings that crack the eye. It would appear that the different artists, one in each corridor must have something to say about his surroundings, because Benson's are much cooler than those of Pearse's or Shirlaw's, as his painting is cooler. The same is true of Reid's side, as his panels (apparently influenced by Claude Monet) are cool amid less hot decorations. These cooler panels are dainty, simple and altogether lovable. In the west corridor Shirlaw has used very strong tones. He observes the traditions of his Munich training and keeps the generous display of fresh tones so vigorous that no decorator could out-tone them. These are, however, the works of an experienced man, a school man, whom we sincerely respect, one who evidently knows his business and they keep well with the decoration of this entire corridor. His environment is much hotter than Benson's, the buff and blue of the latter here becomes a heavy green and over-done bread-crust: no, heavier than bread-crust. Whether fate intended to favor or kill him, it is a fact that Benson's panels do not "keep" as well as Shirlaw's, though I must confess that the cool panels are a wonderful relief in this over-cooked vaulting.

Where is the trouble to be found? Is it on account of the oil-paints? Can we not find some medium that will keep the colors tender? But the vehicle is, doubtless, the same in the artists' panels as in the journeymen's patterns and the panels are not choked and smothered. All artists know that there are ways of mixing and managing oil-paint that lead less to this heaviness than others. Certainly we need those disappointed art students up there on the scaffolding. The material has much to do with it: the mosaics in the lower vaulting are restful and tender, because of the material used.

The glass-mosaic in the main entrance to the Chicago Library is more brilliant than this stone-mosaic. It is the product of Tiffany (who did all the interior decoration), and is generally liked by the laymen. These same ignorant (?) laymen show much sense, if claiming no learning. But we will take this up another time. What now claims attention is painting. The greater part of it is better than inoffensive,—it is very satisfactory. Why then should the great reading-room act like an east wind and remind one of his appointment at the dentist's? This interior is finished in a very bold Renaissance, suitable to the ample space. With the architecture no one can find fault, as it is a good following of the style. The ceiling seems to be over-elaborate, has an air of effort about it, but the style is thus:—

The pilasters have upon their broad flat faces the usual Renaissance elaborations in pretty strong relief. These pilasters are painted a heavy green, a somber inelastic tone; the elaborations were laid in aluminium and washed with thin lacquer of a peculiar light yellow-green tone, poisonous,—gangrened. Why? and why again? Even the very boys talk about it. Are we to educate the youths to love such color? How could any superintendent of painters survey this complacently? Did vaulting ambition o'er-leap itself? It seems to be thus with every mighty effort, and the Congressional vaulting is almost as bad. There is a Venetian red around this "greenery-gallery" that does not help it,—a heavy red. The elaborate, massive ceiling is likewise in similar tones of green and red. The fault seems largely caused by the method and material. May time and soft-coal tone it!

Stepping down the northern marble stairs the soul takes courage. This is a warm, faintly red marble, less decorative but more friendly than the white marble of the great south entrance. There is much to discuss in these uses of marble, but to-day we talk of paint.

The G. A. R. Memorial Hall, a vestibule and a meeting-room (all spacious) occupy a part of the Library Building for a term of years. There is much green marble (*vert-des-Alps*), and bronze with Venetian red. The round-headed windows are very large, and panels and doors of similar proportions carry out the same treatment, being surmounted by arches. The deep green is richly-veined with white and is carried high up as a dado and as wide bordering to the openings and panels. Above is a very broad frieze in Venetian red. The ceiling is correspondingly massive and sufficiently elaborate, though less imposing than that of the great reading-room. Each of the blind arches is occupied by a bas-relief trophy group, painted in imitation of bronze and very well done,—quietly done. There are bands of real bronze, quite ornate, which follow the framings of the marble and accentuate well the shapes of all these openings and panels. These are fine castings and a credit to the building.

Though a trifle gloomy, this hall is harmonious and in excellent taste. Were it hung with flags and more furnished, as time will cause it to be, it might be counted a real success. Could the red

frieze over the green marble be painted by one of our good artists, like those grand halls in the Boston Library, the old soldiers would glory in it. Mr. Abbey caused the room in Boston, which he so wonderfully decorated, to be toned in a green much like this marble, and it accords perfectly with his vibrating paintings. *Vibrating* painting seems the crying need. The artists cause the oil-paint to shimmer while the journeymen seem to choke it.

There is now completed, at the Art Institute, a new room called the "Stickney Memorial." Mr. Millet, dean of the Architectural School, designed it. He has used a similar green marble for dado and door-frames, and has had the bay under the skylight painted in quiet, harmonious greens—which do vibrate—while the body of the wall is hung with a rich, red plush, whose changing tones suggest pomegranate. The skylight is of amber glass and flat overhead. A Greek fret, in gold embroidery, surrounds the red stuff. This room, so very like the other, is not gloomy at all, nor is it a question of lighting, as the G. A. R. Hall has unusually large windows, and many of them. That greens need not be somber is proved by the neighboring "Field Memorial Room" (Tiffany work), in ebonized wood, mottled-black mosaic dado, sage-green plush walls and a sage-green bay above. It is as perfect and satisfactory as possible.

The effect of mosaic as compared with painted decoration, the use of marbles, gold and bronze and their proper manner of marriage with the architect's work will furnish material for future writing.

JAMES WILLIAM PATTISON.

MURAL PAINTING IN ITS RELATION TO ARCHITECTURE.¹

A DEFINITION is a good thing to begin with, and I trust in this case a negative definition may be a still better beginning.

In the first place, mural painting is *not* the mere application of tints to architectural surfaces. Yet I venture to say that to many architects this whole question is a mere afterthought, left to the dregs of their appropriations of time and money.

Some architects would seem to consider it but a concession to the weakness of their clients; considering, themselves, that any interference with the whiteness of the structure is a thing to be regretted.

Under such haphazard influences, having passed through the gloom of the "black-walnut period," we seem to have emerged into an era of "white and gold," which has not inaptly been termed "the last resort of feeble minds;" it might otherwise be termed the first. Imagine St. Mark's or the Capella Palatina done in white stucco, with only the decorated members picked out in gold.

The color of a building is an important factor in its effect. And mural painting, as the application of color to architectural surfaces, is not a matter of caprice, still less is it of secondary importance.

In your use of architectural forms, you have a reason for their employment; precedent and the inevitable logic of new conditions influence your choice of details and the use you make of them. By no means the least of these details is *color*. In the form of your building, color bears much the same relation as it does to the human form; it distinguishes the living from the dead.

"So coldly sweet, so deadly fair,
We start, for soul is wanting there."

Byron was speaking of modern Greece; he might have been speaking of much of our modern architecture.

When I speak of the color of the human body, it is not of the application of artificial cosmetics to the complexion, but of the varying tints which play over the surface of the healthful body, not only differing according to the actual surface, but corresponding to the different play of the muscles underneath. In a word, the color of the human body is *organic*. Precisely so should be the color applied to architecture. Its values are threefold. Color should be *constructional* always. It is good if it is *expressional* also, and agreeable in *texture and tone*.

In regard to the constructional value of color, you recognize the principle in your exterior construction by your choice of materials. You continue to recognize it in the interior finish by the use of mosaics, natural woods and metal-work. Why then deny it to the applied color-treatment of constructive surfaces? If you do not deny it in theory you too often ignore it in practice. That which supports weight should have the appearance of sufficient strength to carry the weight. Trivial or flimsy color makes your solid wall appear to be so in reality.

You reduce stresses and strains to an exact basis, yet the color which clothes your construction receives but scant consideration. Certain architectural forms express clearly their purpose or origin; as the dome, its pendentive, the frieze and the lunette. The forms mean something in the building; the colors they bear must express that something or their meaning will be lost. The dome crowns the structure, and suggests the heavens which are above the earth; therefore, its color should relate to its structural form, and send it swinging farther up into the sky itself. The pendentives lock together the supporting arches, and in color should appear to be as solid and resisting as they really are. The frieze binds the whole together, and must be a ligature of color, as well as of structure.

¹ A paper by Mr. Elmer E. Garnsey read before the Thirty-third Annual Convention of the American Institute of Architects, November 15.

The lunette is a resultant form, and may be treated with much greater freedom in color than if it were a supporting form.

In the mural painting of the dome and rotunda of the Library of Congress the color scheme was based upon the various marbles used in the great order of piers and their connecting arcades. The piers are dark Numidian, standing on a base of dark Tennessee. The engaged column is of a lighter red. The two-storied arcade which connects the piers is built of rich tawny Siena. The capitals of piers and columns are of plaster, and all above this point is of the same material. The problem was to build up a constructional color scheme, with the colored marbles as the foundation. First, the groups of capitals crowning the piers were solidly gilded; then the entablature was treated in gold and gold-color, forming a cincture to bind together all the great supporting masses. The pendentives above the piers were painted a gray red, recalling the color and supporting power of the marble below. The arches in lighter tones of the Siena beneath them, and the secondary frieze of eagles, resting on the arches, and forming the drum of the dome, is again treated in gold. The inner surface of the dome is practically encrusted with plaster ornament, rendered in grey. Its coffers bear gold rosettes, relieved against a blue ground.

Considering the height of the dome, the blue in these coffers has been varied, in order to avoid monotony; and this has been accomplished, not by mixing the colors before they were applied, but by painting certain small mouldings that frame the coffers in yellow or red; so the blue in one section of the dome appears slightly greenish, while the next has a slight violet tone by the complementary contrast thus introduced. Finally, the collar of the dome is enriched by Mr. Blashfield's figure composition, executed on a blue ground. The whole is one of the largest interior surfaces treated in color in America; and the entire scheme is an example of the *constructional* value of applied color.

The second value we have claimed for color is that it should be *expressional*. Nor is this entirely a sentimental consideration. Our impressions are received through the senses, and certain colors create certain mental impressions or impulses. Mankind is not alone sensitive to these impressions, and for a pertinent, if not a perilous, demonstration of this fact, try waving a red cloth before the eyes of a healthy bull.

The blue of the sky dominates every fair landscape, and we associate it with vast space and soaring height. It has been associated with religious faith from the remotest times, and the roofs and domes of both pagan and Christian temples bear witness to the sentiment expressed by it to man in all ages. The green of nature is reposeful. It reminds us of the cool depths of the forest and the peaceful quiet of the country side. Yellow, the color of sunlight, is joyous and brilliant, and within its scale lies gold, always a human attraction. Absolute black suggests negation; it is sad to us, and we'll none of it. White, on the other hand, stands for purity, cleanliness of body and mind; and we associate it with angels and virgins. Red, as before suggested, is an exciting color, is associated with festivity and "a hot time." We shall appreciate its value in mural painting the better after seeing Pompeii.

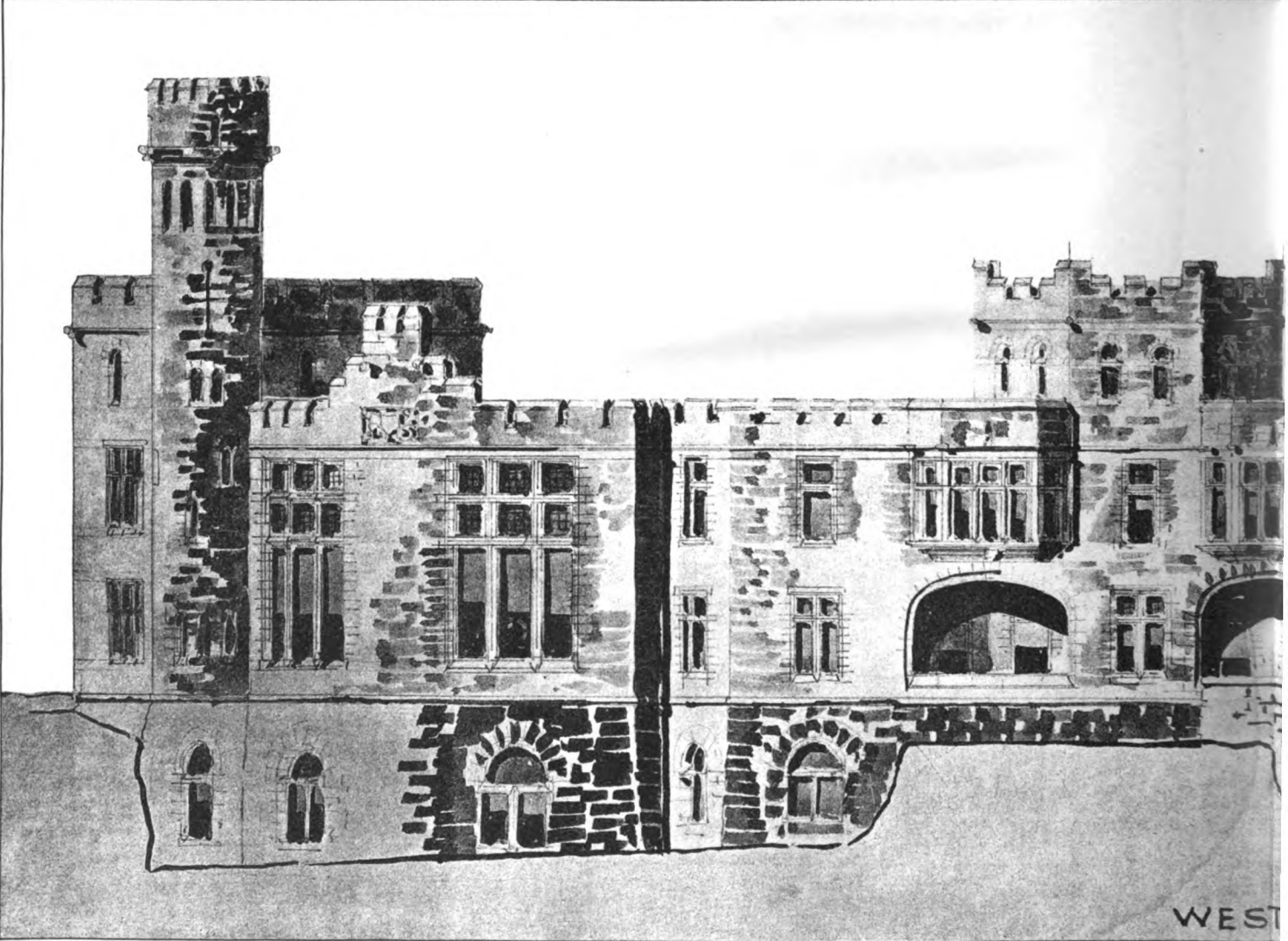
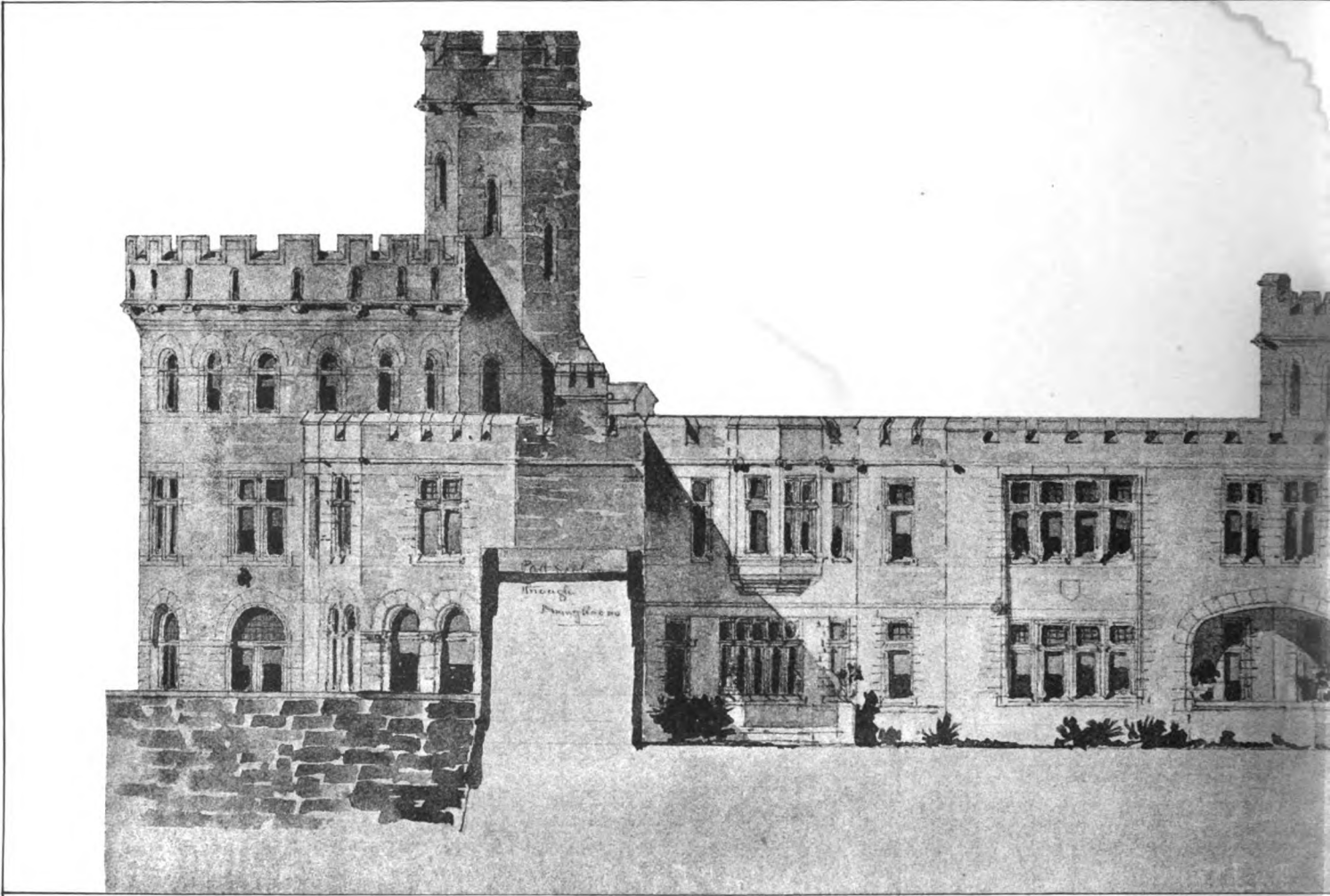
The expressional value of color is also associated with local and climatic conditions. The peculiar and persistent atmosphere of Pittsburgh affects our color perceptions differently from the clearer environment of the coast cities. New England has a different complexion from the south, consequently demands a different prescription; while Old Greece and Italy are still farther apart in respect to color expression.

The third value of color includes *texture and tone*. What is called a "good job" of painting is infrequently a satisfactory finish for an architectural surface. Its smug perfection is inartistic. We resent the *paint*. Copy a tapestry—color for color, pattern for pattern—on a wall and hang the tapestry beside it. The one is tame and uninteresting, because it lacks the texture of the other.

In the Piccolomini Library at Siena, a series of inscriptions in gold on a blue ground runs quite around the room, just above the principal frescoes, and above the stylobate, forming both a base for the paintings and a strong color band of great value. Mr. McKim desired to use the same motive in Bates Hall, in the Boston Public Library, but as no paintings yet existed in the wall-panels above, that might have suggested suitable inscriptions, and as in this instance, at least, no Bostonian would have been bold enough to suggest a description of something which did not exist, the flat painted surface, unrelieved by lettering, lacked interest. The problem was how to give these surfaces a suitable texture. It was solved by casting the panels, into which the band is divided, from a strongly marked bull's hide, giving the finished work the effect of painted leather. To answer your question, why not have used real leather instead of imitating it in plaster: the heat-flue openings occur directly behind these panels, and leather is not a good heat-resisting material.

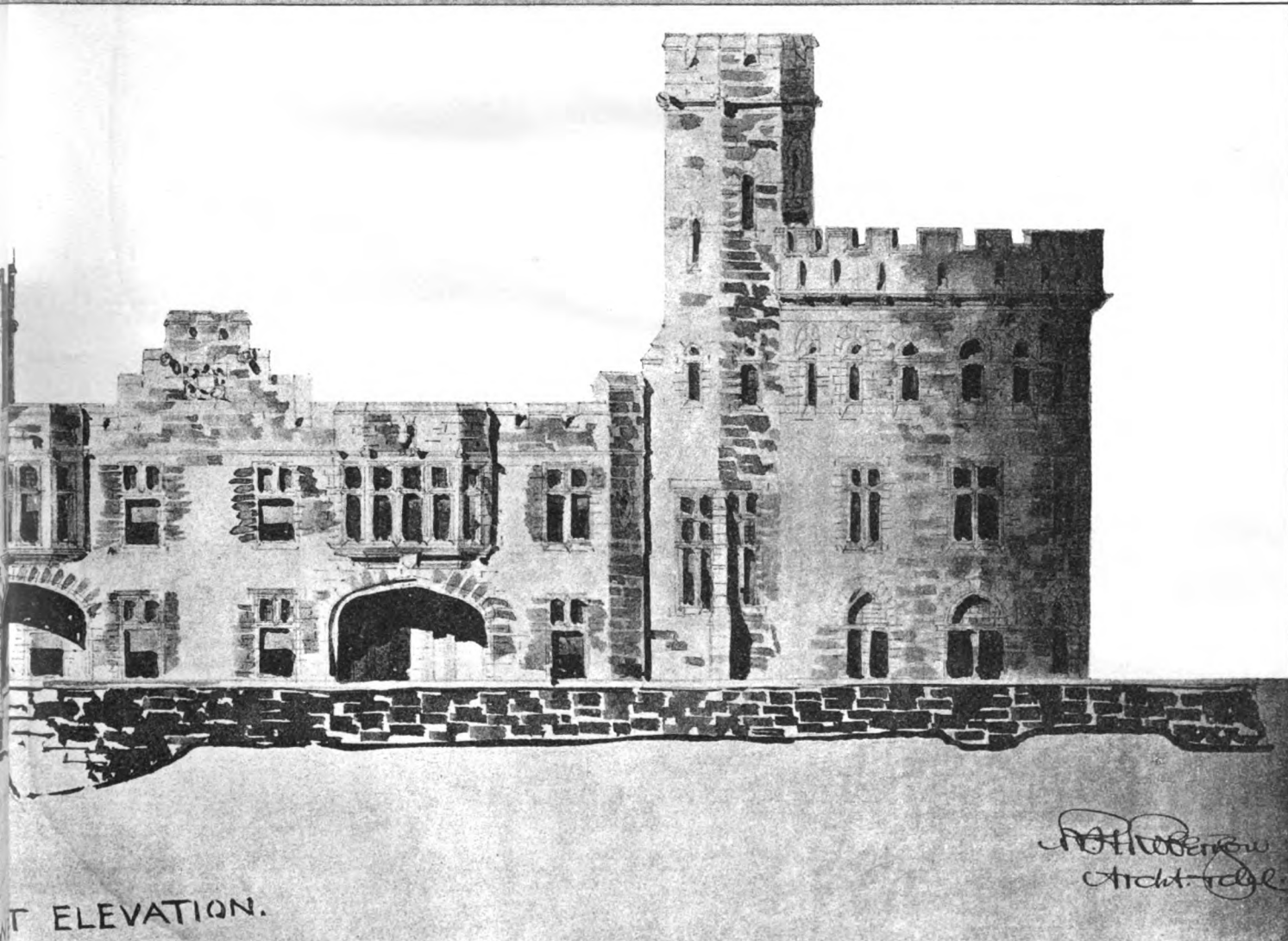
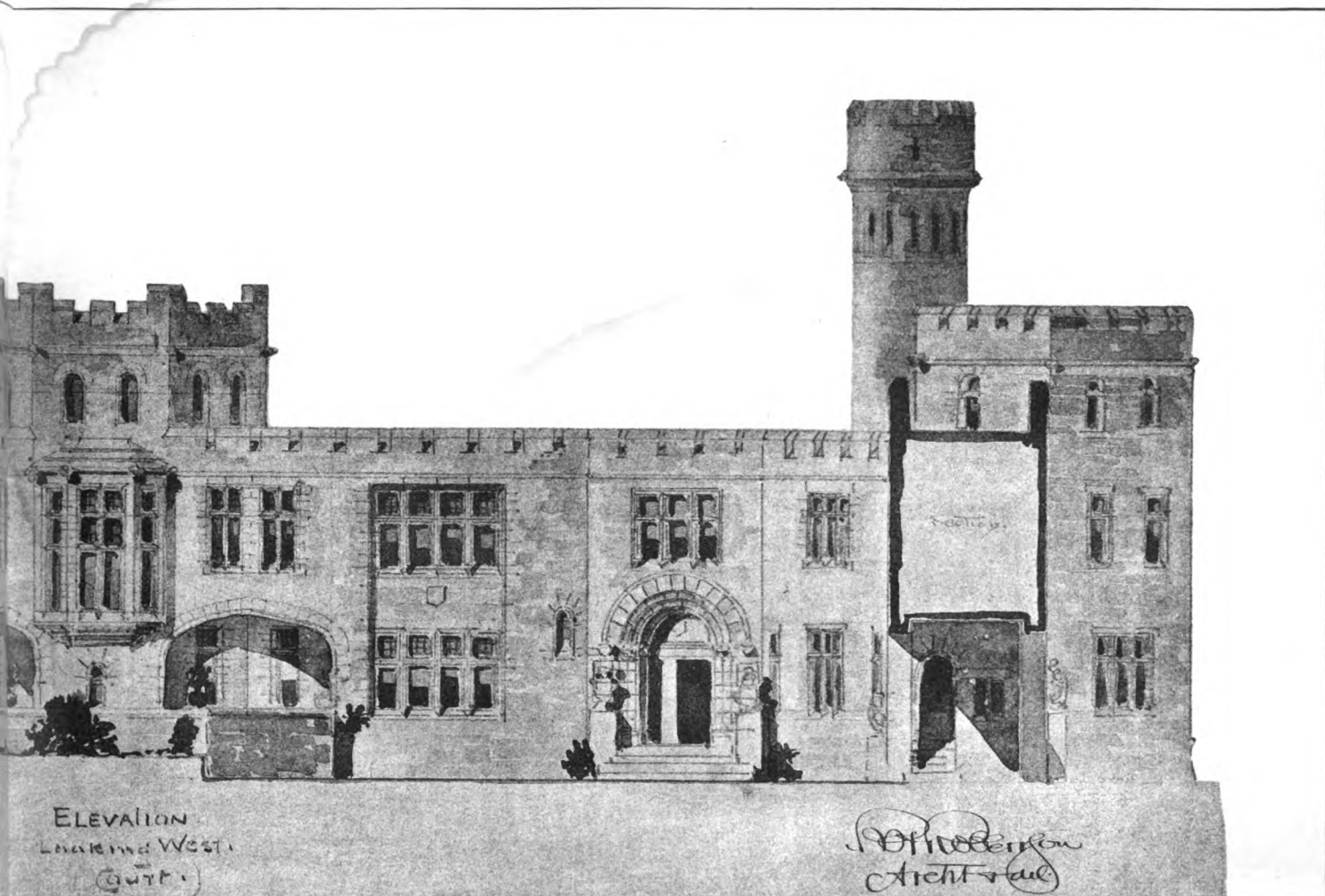
But how shall we achieve texture in paint on a smooth wall? It certainly cannot be done by the ordinary methods of house-painting, nor secured through the usual painter's specification. Different technique and processes must be employed. Scumbling, or dragging an opaque color over the surface, and then glazing with transparent color, is one method; tricks and experiments, failures, and, finally, success, may be achieved by the expenditure of time and money.

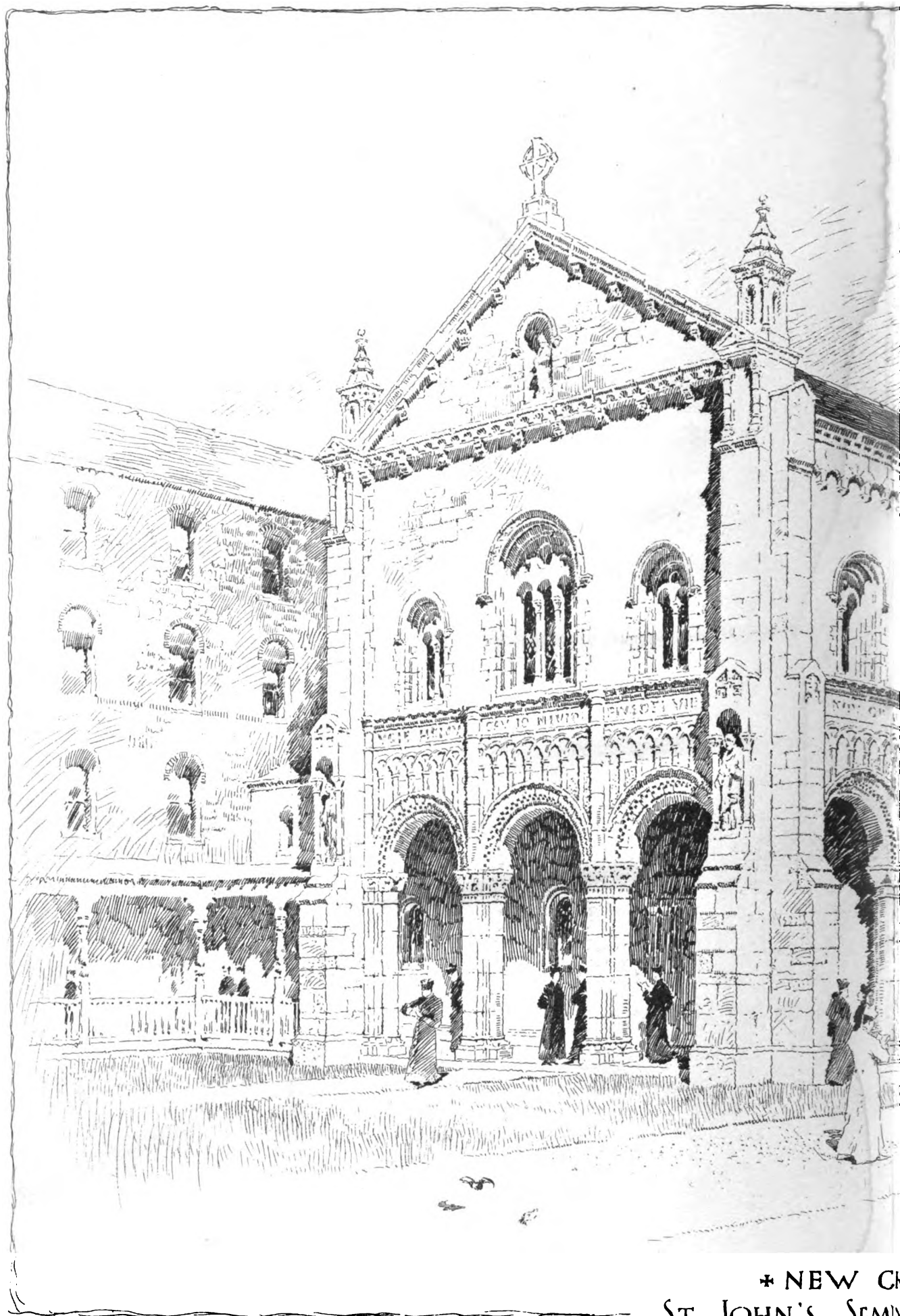
Tapestry and leather are also expensive wall-hangings, and texture in color cannot be secured without proportionate cost, while it may be made as beautiful, in its way, as either of these, capable of



WEST

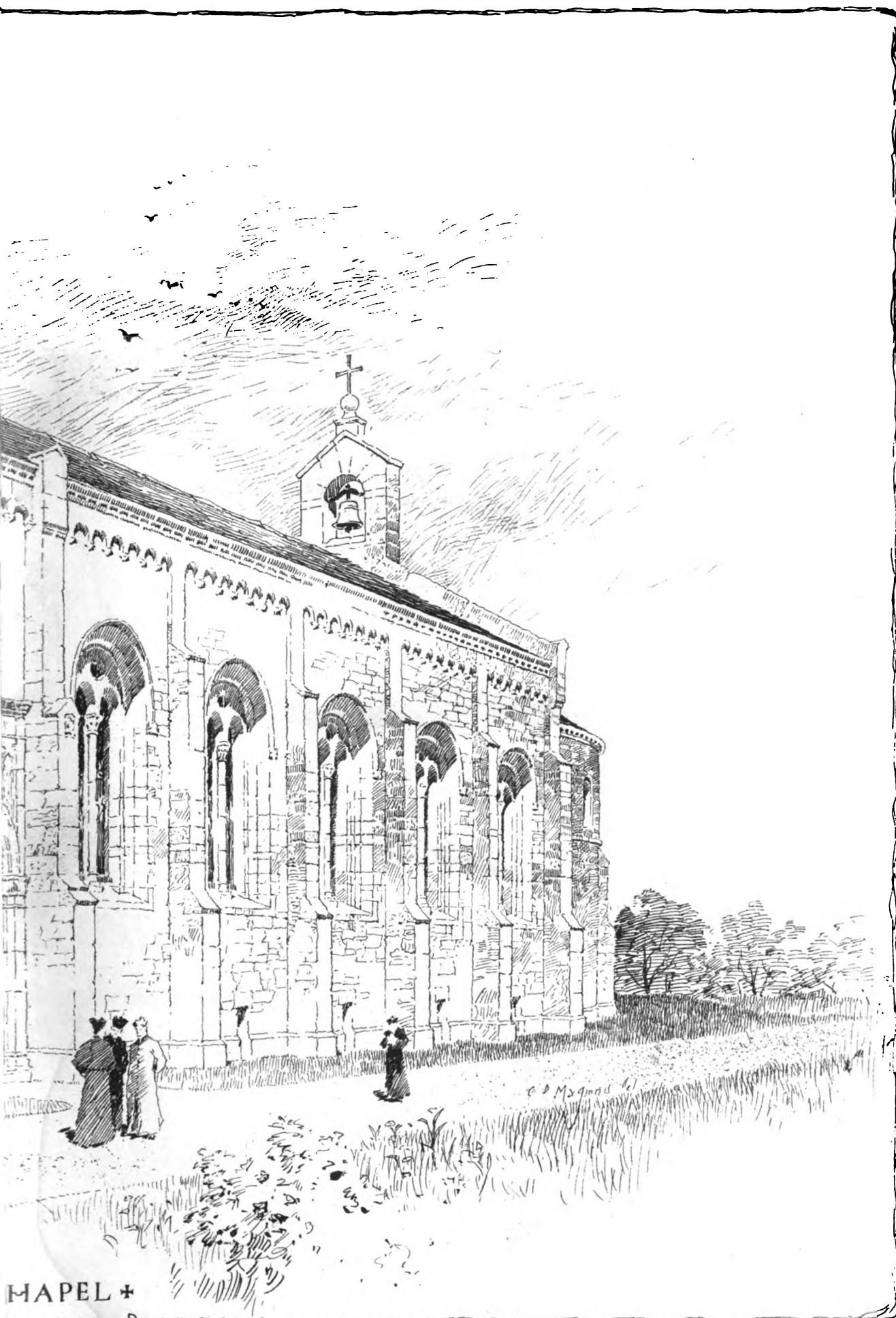
"THE HOUSE ON
R. H. ROBERTSON





* NEW CHURCH
ST JOHN'S SEMINARY

MAGINNIS WALSH
TREMONT



CHAPEL +
HOLY TRINITY BRIGHTON

G. SULLIVAN ARCHT.

B.L.D.C.

honorable association with the finest woods and marbles, and the choicest products of loom and needle.

The Romans had a high appreciation of the value of architectural color-decoration, and some consideration of the methods of Pompeian painting may aid us in the illustration of its principles. Many of even the smaller Pompeian rooms possess a wonderfully monumental character. There is little to be seen in them but the wall-paintings; the ceilings have disappeared, hardly leaving a hint of their construction. The mosaic floors are concealed by a layer of pumice and ashes; a few columns remain without entablature, and doors and windows are but crumbling apertures. Yet the scarred walls have kept their glories of color for eighteen centuries, and there exists the greatest academy for the study of mural painting in the world to-day.

The laying out of these wall-paintings is essentially architectonic in character and method. A dado or stylobate of dark color, grayish, brownish, or purplish-black, the main wall-surface panelled with the primary or secondary colors, the style and rail in white or yellow, and the frieze above in some pale color, white or gray. The general divisions were first laid out in broad, solid masses of color, then the ornament, foliage or figure subjects, were painted on them in a thick *impasto*, sometimes appearing to have been executed with a spatula, rather than a brush. Finally, the whole surface was rubbed with wax, and beautifully polished. These walls exhibit the value of color in its application to architecture in the relations under which we have been considering the subject of color. The color is constructional, it is frequently expressional, and its texture and tone are superb.

The ornamental forms with which the Pompeian walls are decorated do not always arise from their construction, but they are so invented and disposed that the wall is made beautiful, which is almost the best that can be asked of the mural painter. A sufficient suggestion is made of the structural character of the wall, but the painter did his work with the greatest freedom, not attempting to deceive us by a pictorial treatment, but preserved the vertical plane of the wall, while tracing upon it a pattern of perspectives, landscapes, or figure paintings.

Tone in mural painting is that almost indefinable saturation of the whole work that, like the atmosphere of Indian summer, melts the landscape into one delicious color impression. The first impression one receives in the Borgia apartments in the Vatican, painted by Pinturicchio, is that of an exquisite tone or bloom which pervades the whole. A dusty-gray purple and equally dusty and gray gold seem to have crept over the whole interior. Nowhere does one or the other become a dominant color-note. Everywhere they are both felt rather than seen. When we examine the technique of the painter we find that gilding has been carried through the entire work by such subtle means and by such rare judgment that there is almost a patina of gold over the painted surfaces and the ornamentation in relief as well. The architectural forms introduced into the backgrounds, the embroidered hems of the costumes, the details of armor, jewelry, and other accessories are modelled directly on the wall in slight relief, and everywhere this relief is touched with gold. Not only these, but the fruit on the trees, the flowers in the foreground, the distance, and even the sky itself have been brought under the same convention by carrying over them all a sort of diaper of little dots in relief, each of which is deftly gilded. By these means the eye is never allowed to receive an impression unaffected by gold. Again, by contrast with the dull yellow of the gold every other color is tinged or affected by the complementary of gold color, which is purple. It is by the judicious juxtaposition of complementary colors that this neutralized bloom is secured, and no painter who may be called a colorist can be ignorant of their value.

Mural painting is not only a question of color, but of pattern. And by pattern we mean any sort of breaking-up of spaces, by design; whether by lines, ornaments, or figures. Much confusion exists in the study of design. The painter studies from the figure; the designer studies ornament. The architect studies both, but not in reference to color. The whole matter of surface decoration becomes a question of pattern; and in taking up the subject, let us consider it under these three heads: *Pattern, Balance of Pattern, and Flatness*.

As soon as we leave unbroken planes and begin to cut them up in any way, by ornament, by figures, or by lines, we begin to work a pattern. The first condition that must be fulfilled on a painted wall is that it shall be an agreeable piece of color. Then, is it ornamental? Does it cut up into a good pattern? Then, what is it all about? What are the names of all these gods and goddesses? Unfortunately these questions are usually reversed. Take Sargent's work in the Boston Public Library. It has been criticised as confused. The first impression we receive in looking at it from the top of the staircase is of a rich brocade. It is a splendid piece of color hung in the shadow of a vault. Then, as we approach, a sort of intricate pattern in red and gold appears, and then we find that this is really composed of groups of figures; vast wings and strange emblems, shadowy forms of pagan birds and beasts. If it appears confused it is because the artist has delved into the mysterious religions of the past, and has expressed in his work the confused ideas of religion that then prevailed. There is no confusion of design when he represents the simple truths of our religion in the frieze below the lunette. The line of prophets is as majestically simple as a row of columns.

The use of the human figure in the pattern is valuable as a part of that pattern. The beauty of the pattern is not entirely dependent on

the figure. A wreath or cartouche is equally valuable if properly used, and architectural motives, landscapes and geometrical forms each have their value and place in good pattern-making.

The second consideration of pattern is *balance*. Balance of empty spaces with detail; of color with form, and of ornament with simplicity. In Mr. Vedder's lunette called "Rome," in the Walker Art Gallery at Bowdoin College, the architectural background is not only valuable as a ground against which are displayed figures and symbolical devices; its balanced masses and central opening give symmetry and restfulness to the composition. And the principal figure with its supporting groups are studied not only for their own fine contours, but for the shape and size of the spaces which occur between and about them. Indeed, no work by this painter lacks the keenest perception of balance of pattern, whether it be in mural painting or in book illustration. The lunette form especially demands balance of pattern and stability of design. Its decoration should not appear as a procession that moves across it, emerging, apparently, from the frame at one side to disappear at the other. The frieze is the place for the procession. Its form demands treatment which shall suggest continuity or repetition. That of the lunette an arrangement that shall be complete in itself. For the wall that ends a vaulted ceiling stops the succession of arches or vaulting, and its design must express stability. An interesting comparison of figure-patterns applied to the decoration of lunette forms may be made between the work of Messrs. Melchers and Cox in the Library of Congress, where in identical spaces they have proceeded upon opposite theories of design.

The Abbey decoration in the Boston Public Library can hardly be considered a successful example of balance of pattern. In the first place, it is a frieze broken into a series of panels of arbitrary lengths, the reason for which is not obvious. Such divisions of a continuous surface, without architectural reasons for their existence, are at once disturbing. There is no balance of decorated and plain surfaces in the individual panels, nor is the same general plane carried along over the painted wall. As illustrations of the Holy Grail legend they are interesting pictures; as mural paintings they lack relation with the architecture.

On the other hand, the work of Chavannes, in the same building, relates very closely to the architecture. As color, it harmonizes perfectly with the marble which frames it. As pattern, it is in scale with the architecture, and a fine balance runs through the whole series. Landscape plays an important part in Chavannes's pattern. The rocks and hills, sky and water, masses of earth, trees and buildings, serve in the making and balance of the pattern, quite as well as the human figures. In one panel sea and sky balance each other. In another an unbroken mass of sky is contrasted with a mass of flower-broidered earth. On the long wall the principal line is that made by the Muses ascending toward the genius in the centre. These figures are not disposed in perfect symmetry, yet they do maintain the requisite balance, and their general trend triangulates with the central doorway.

Another equally valuable example of balance of pattern may be seen in LaFarge's "Ascension" in the Church of the Ascension, in New York. The disposition of landscape, masses of clouds, and of angels above and disciples beneath, create perfect balance of parts, and the placing of the figure of Our Lord, at the exact point where it dominates the whole, although this is not the actual geometric centre of the space.

The third consideration of pattern is *flatness*. The word does not perfectly express the subject, which includes the much-discussed question of the wall as a solid and unpierced plane. The stricture is frequently made that the mural painter makes holes in the wall. There is no law, however, that defines how much flatness is desirable, nor are there rules as to how it is to be obtained. Absolute flatness and entire disregard of modelling would be wearisome to both the eye and the imagination. Absolute disregard of the wall as a constructive surface is equally offensive to the reason. Giotto's style is sometimes cited as the ideal technique for mural painting; but it must be remembered that Giotto painted in the way he did, because he knew no other way. Nor are the conventions of Japanese of much greater value to the painter of to-day. The landscape painter seeks to destroy the actual vertical plane of his picture by leading us insensibly off into his aerial distances.

The patterns of primitive peoples are perfectly flat, and at the same time quite incapable of inspiring lofty imagination.

Referring to the Pompeian walls, we often find a sort of linear perspective employed in their patterns. There is no attempt at actual illusion, yet in those small rooms the effect of these devices is to give us some suggestion of breadth. We are not led out through the wall into out-of-doors, but some impression of the outer world has been brought in to us.

Architectural forms, when treated in the grand style of Raphael's "School of Athens," do not offend us by any undue suggestion of extra-mural nature. That noble vista of arches, while it stimulates the imagination, is no panoramic or illusive background.

It would seem, therefore, that while linear perspective may be reckoned as of much value in mural painting, aerial perspective had better be left to landscape painting.

The treatment of the figure in regard to flatness of execution opens up a still wider field of discussion; as precedents may be found for almost any degree of modelling, from an absolute silhouette to the frankest naturalism.

Some painters satisfy themselves by using a strong outline around the figure, which is so evident a convention that it flattens everything within its boundaries, and allows sufficient modelling in a lighter key to express the action of the figure. The difficulty they encounter is that the strong contours thus obtained do not always form an agreeable pattern, and the gain in one quality is at the expense of another.

Perhaps some study of the sculptor's technique might be useful to the mural painter, especially of such work as the low-relief decorations of certain Roman vaults and tombs. The contours are strongly marked in some places where the tool has cut deeply into the fresh plaster. Again, there is no line at all where the figure emerges from the ground, and its contour is entirely left to the imagination.

There are many ways of achieving beautiful results, and general principles, rather than dogmatic statements, should guide us.

In conclusion, I beg to recapitulate the propositions under which the relations of mural painting to architecture have been considered:—

First.—That color shall be treated with the same seriousness accorded to form.

Second.—That it has these essential values: constructional, expressional, textural and tonal.

Third.—Color is beautiful in itself, without ornament.

Fourth.—If design or pattern be introduced, it must be architectonic, and not pictorial in character.

Fifth.—The essential characteristics of pattern are three: pattern as such, balance of pattern and flatness.

THE LEGITIMATE DESIGN OF THE ARCHITECTURAL CASING FOR STEEL SKELETON STRUCTURES.¹

IT has become a trite saying that the world moves rapidly nowadays, but in hardly any department of human industry is this more true than in the development of the idea and assimilation of processes of skeleton construction as applied to modern buildings. In its fundamental sense this method of building is old as architecture itself. In its application to a many-storied structure, it is entirely of the present day, and almost of the present decade. Skeleton construction was mothered by necessity, and found architects unprepared. Consequently, the first attempts to carry a building through many stories, employing the post-and-girder construction within and without, were hardly what may be termed successes. But although it is less than twenty years since the first perfected structure of this type was put before the world, it is fair to say that the methods of design for tall structures have crystallized into lines which are both logical and rational, and which have been very generally accepted. In this respect our modern tall office-buildings have shown what can fairly be termed a true development of style, and in this respect it seems fair to say that they can rank with the productions of the great building periods of the past; for the typical design for an early Christian church, a Greek temple, or a Gothic cathedral, was hardly more fixed in its general essential characteristics, in the division of parts, the scheme of design, and the essence of the decorative treatment, than our modern commercial buildings. Rightly or wrongly, if we may fairly judge by the majority of tall buildings which have been erected of recent years, there is a distinct principle involved in architectural design as applied to a building of ten stories and upward. This principle is so logical and commends itself so thoroughly to one's judgment that, however much we may differ as to matters of detail or characteristics of individual style, or however much variance of opinion there might be as to the inventive qualities manifested, it is surely acknowledged that there is a right and a wrong way to design a tall office-building.

If I recollect rightly, the first of the skeleton-constructed buildings—namely, the Home Life Building, Chicago—was built of cast-iron columns, extending only through a single story. In other words, it was a regular post-and-girder construction, in its essence comparable to a series of square tables placed one upon the other. The design of the exterior followed the same scheme; that is to say, each story—I am speaking from memory now—each story was by itself, with string-courses marking all the floor-levels, and a succession of similar stories piled one upon the other without a very marked proportion between the whole height and the individual parts. This was the early scheme adopted and was the style which has been followed practically in all the buildings of a date previous to 1880. It was constructed essentially from an æsthetic standpoint that the floor-lines should be marked on the exterior by a projecting course, and while the buildings were of relatively low height—that is to say, not over 100 feet high, this scheme presented certain advantages, and was an easy if, perhaps, not altogether satisfactory solution of the problem. Only rarely in the earlier designs was an architect bold enough to attempt to omit an occasional floor-line, and run a decorative treatment, either pilasters or plain wall-surface, through more than one story. I well remember a severe criticism which I received from one of my building masters who attempted to curb my inquisitive desire to incorporate in a design the features of the Museum of the Capitoline Hill, which Michael Angelo designed, with pilasters extending through two stories, a treatment of only slight height, in fact, but carried through the whole height of the building.

About the time that the skeleton-construction was taking shape in the West a different scheme of design for the exterior of a tall building was started by the De Vinne Press Building, in New York. This building followed what might be termed the aqueduct style, and in a certain sense was a transition between the post-and-girder style, where each story is projected, and the present, in that several stories were thrown together and connected by heavy arches at certain floor-levels. This aqueduct style has found a great deal of favor at the present time, and, with several modifications, has been incorporated in some of our best buildings. It is found in the New York Life Buildings, Kansas City and Omaha; in the Times Building and the Trust Building, nearly opposite Trinity, in New York, and in a number of other structures. In the later buildings, however, it merges into a feature of the whole rather than a predominating motive. The trouble about it is that an arch is not, generally speaking, a desirable factor in any commercial building. The skeleton-construction was an outcome of a stern practical necessity, and the design which best suits this construction is one which gives the maximum light, and, consequently, a big arch, however imposing it is admittedly as a feature of the building, is not the most suitable form for an office-building measured by the effect on the outside.

Neither the so-called post-and-girder nor the aqueduct style has seemed to just fit satisfactorily into the design of a building reaching up through twelve or more stories. The monotony of repeating row after row the numerous floor-lines, the difficulty of getting a proper feeling of scale for the building as a whole, added to the impossibility of capping the structure with a cornice which shall have any fair proportion between the order for the story immediately beneath it and the whole building, have led to what can be termed the columnar form of design, in which the building is treated as a whole, with hardly any attention given to the window openings as such, the façade being constructed in much the light of a column and being given a strongly marked base, a plain shaft, and a rich crowning capital. This form is, perhaps, more emphatically manifested than in any other way by the strikingly successful design made by Mr. Bruce Price of the Sun Building, published in architectural papers here and abroad, which has never found realization in effect, though a very similar treatment, and no less successful, was wrought out by Mr. Price in his design for the American Surety, which structure, perhaps, can be taken as fairly as any other one building in the country to represent the present attitude towards the design of a high commercial building. The base in this building, extending through several stories, is very marked, is proportioned to the whole structure, and above this, through a dozen or more stories, the wall is in effect perfectly plain, with no emphasis about the windows, and though, undoubtedly, the spacing and exact size of the windows do count, they are of necessity neglected and are mere holes placed at perfectly regular intervals in the wall. And the whole building has a magnificent crown proportioned not to the height of the story but to the height of the shaft as a whole. Instances might be cited from all over the country from what is practically a similar treatment of design for tall buildings, showing that though differences from point-of-view may be as wide as that which marks the difference between the excellent work of Mr. Sullivan, of what we might perhaps term the extreme impressionist school, and the work of McKim, Mead & White, which adheres to the Classic conditions, yet the essential principle which seems to be most in favor with all these high buildings is to treat the façade not as an aggregate of individual units, not as a spacing or grouping, or combination of openings, but as a whole treated as a whole, and with all the decorative members proportioned to the whole height, the richness being concentrated at the bottom and the top.

It might be said, with a certain degree of truth, that all I have said applies to a high building rather than to a steel skeleton-construction, and that I am avoiding the real point at issue. As a matter-of-fact, however, it is doubtful if the present scheme of design for tall buildings would ever have been evolved except as the opportunity arose in connection with the structures which were extended so far beyond anything that was dreamed of in the old ante-elevator days. Possibly the thought of the committee which made the selection of this topic on construction was a somewhat deeper one than I have thus far touched upon, and involved more the question of fitness of the individual style rather than the scheme of the design as a whole. In other words, are we to-day clothing our architectural forms, especially in our high buildings, with the right kind of ornament? Or, to embody the thought of the extreme eclectics in design, are we following the path of righteous and safe development when we adhere even indirectly to the forms we have inherited from the Classic and Renaissance period, or should we, rather, break away from the precedents of the past and attempt, as we develop a new construction, to at the same time develop a new overcoat for our architectural thoughts? This involves a consideration of what constitutes legitimate design. Illegitimacy, as we all know, is defined as unrecognized parentage. Measured by this definition, the Romantic school of to-day may have parentage, but certainly not ancestors, whereas the most truly legitimate of all architectural designs is the one which has survived, in its various modifications, through the wreck of the Roman Empire, the untoward influences of the Vandals and the Goths, and has come to us strangely modified, perhaps, wonderfully tortured in some details, but still intact in spirit after all the scathing modern episodes of the Neo-Greek, Eastlake, English Gothic, to say nothing of our own vernacular. It is a pretty

¹ A paper by Mr. C. H. Blackall read at the Thirty-third Convention of the American Institute of Architects at Pittsburgh, November 15, 1899.



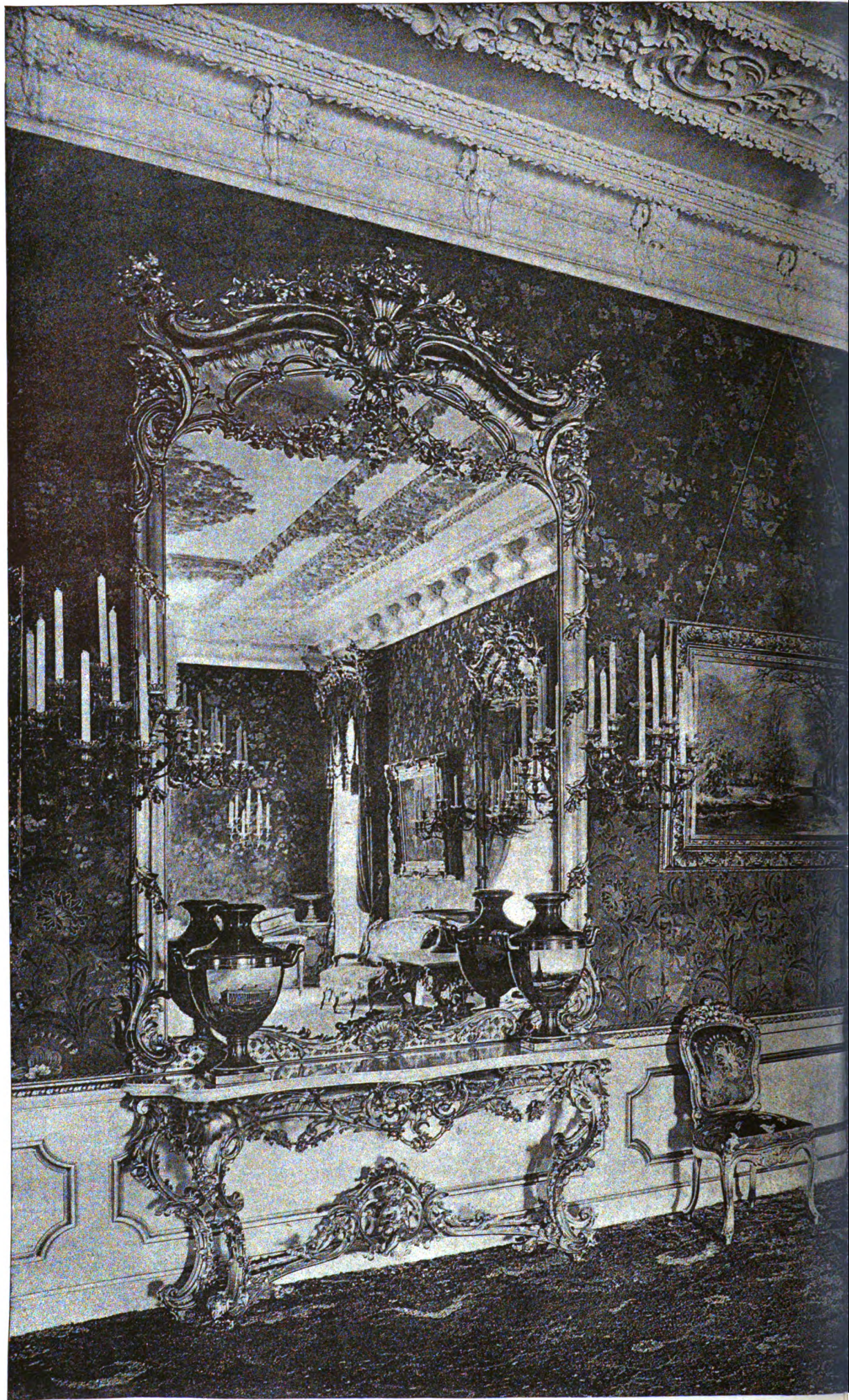
Negative by H. H. Sidman.

THE OFFICE: HOTEL MANHATTAN, 42D ST.

H. J. HARDENBERG

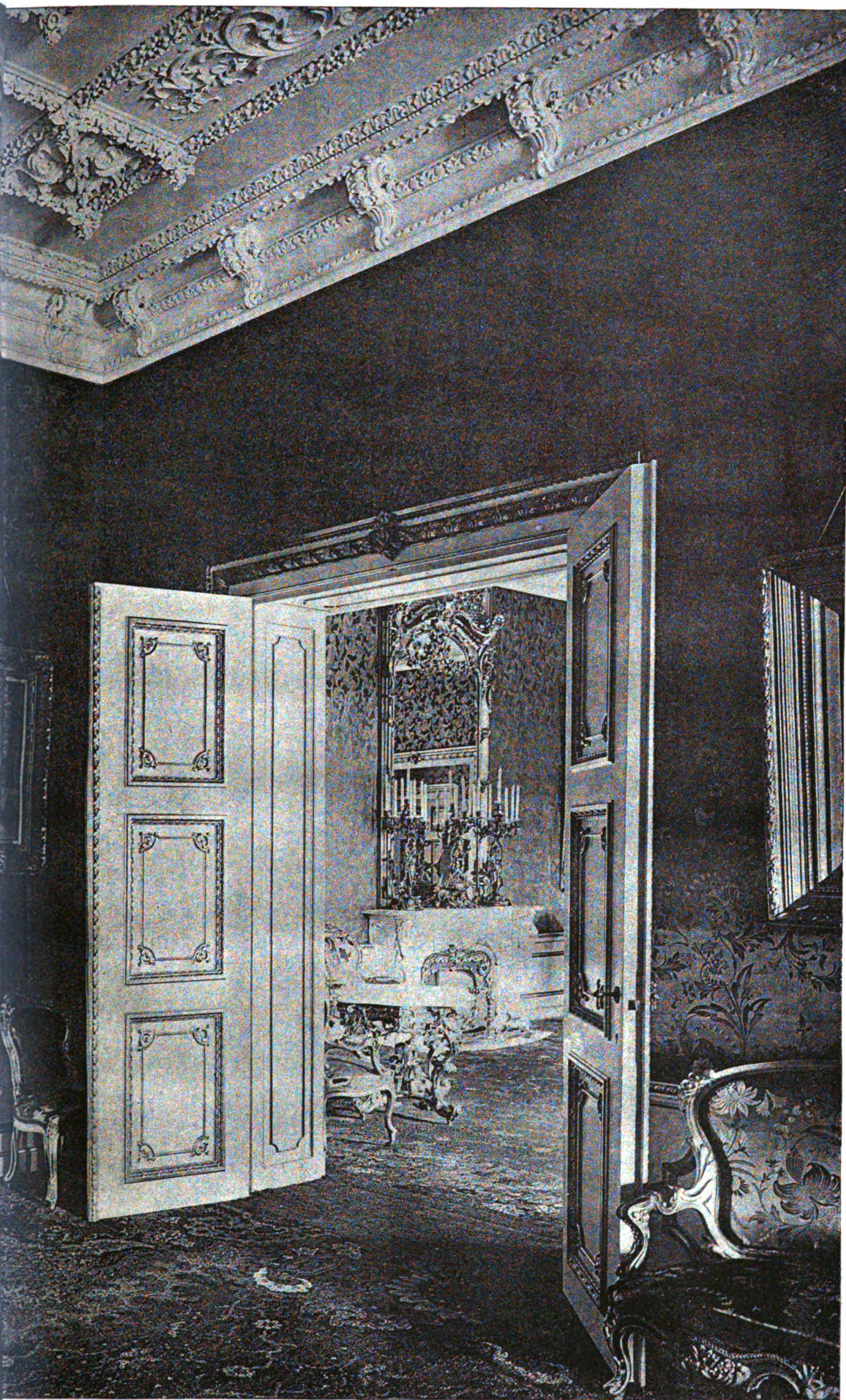


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PHOTOGRAPHED BY S. B. BOLAS & CO. 77, OXFORD STREET, W.

A CORNER OF THE QUEEN'S

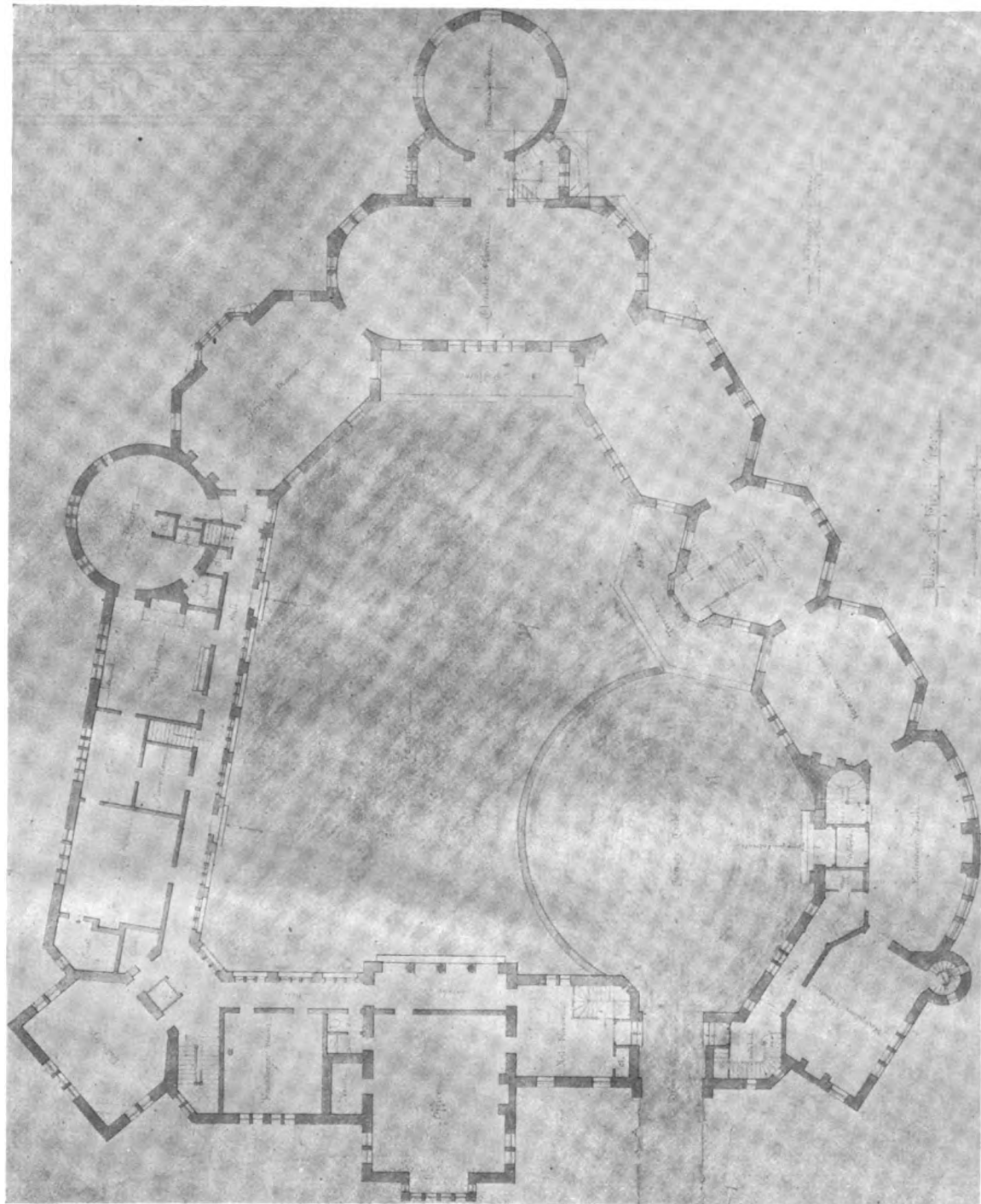


INK-PHOTO. SPRAGUE & CO. LITH. & S. EAST HANDING STREET, FETTER LANE, E.C.

TEA-ROOM: THE HAGUE.

safe rule in this world, when you want to do a thing with the least trouble and the greatest probable chance of success, to first of all find out how other people have done it and how they have succeeded. Styles change, or, rather, the fashion of architecture is not a permanent one. In the last twenty-five years the whole aspect of the profession towards architecture, in its decorative sense at least, has been completely changed and we are now admiring the kind of work which a score of years ago was contemptuously cast aside. Are we then to suppose that the present style, if I may so designate the Classic and Renaissance revived vehicles, is also to pass as some of us trust the extreme *fin-de-siècle* French manifestation is passing?

way shall be peculiarly metallic, and peculiarly *sui generis*. Now there is no disputing in matters of taste, and I might argue from now to doomsday to prove that the Renaissance mantle is the proper design to be applied to a skeleton-construction without convincing any one who thought differently. But I entirely fail to see any lack of appropriateness in using for our own the motives from the past, and though it is very easy to charge against our present architecture that it is effete, lacking individuality, the same might be said of our language or of our methods of arithmetical notation. The changes in our architecture have kept pace pretty fairly with the changes in our speech. Both derived their roots and many of their forms from



"House on the Rocks." R. H. Robertson, Architect.

Undoubtedly, the fashion will change, and yet it seems to me that an artistic expression which has found favor with the greater proportion of the civilized world ever since the year one, has the best chance of long life and continued prosperity; and if we are to take an individual style, we are safer in following pretty closely the lines of Classic architecture and Italian Renaissance, and there is more hope for a good copy than there is for a bad original.

But some of the purists tell us that it is absurd on the face of it to borrow the motives from the three and four story Italian palaces and apply them directly to structures which soar up into the scores of stories, and they would have us cast aside tradition, and, by a species of making the punishment fit the crime, cover our gaunt and ugly skeleton of steel with something which in a mysterious, unheard-of

the past, and that fact in nowise militates against their use. There are certain fundamental forms which have marked the progress of architecture ever since the Beni-Hassan rock-cut temples. They are just as applicable to-day as they were centuries ago. The column long ago ceased to be purely a constructive member. The Greeks, with all their stickling for purism, did not hesitate to simulate in a facing of stone the post-and-girder construction of their roof carried out in the triglyphs and metopes. Nor did they feel any æsthetic sin in marking the ends of their walls with an engaged pilaster which was not a constructive necessity, and though it is very easy to argue that a column is always a column and is not properly used unless it actually supports something, it is also equally fair to claim that the column and the pilaster have their distinct decorative functions quite

aside from any structural necessity and that the end justifies the use of these features when they merely serve their decorative purpose. If we were to simply transplant our pilasters and stick them around promiscuously on the face of a twenty-story building, or should even go to the absurd extreme of running these same pilasters through many stories and crowning them with a classically proportioned cornice, the absurdity of such a treatment would be too manifest to require comment. The past decade has seen the evolution, we believe, of the Classic column, in modified proportions and in varying proportions, which has enabled us to use this most effective form of architectural adornment as applied in our tall buildings. In the very nature of things, we cannot construct a building which shall show its skeleton onstruction inside and outside except by inference. Our reason tells us that most tall buildings must be constructed with columns, concealed with masonry. We get accustomed to some architectural forms slowly. In a wooden house, for instance, we feel quite safe in ignoring all the construction, running our clapboards around the building as though such a thing as studs did not exist, and after carefully studding up the walls of a house we will plant on the outside some imitation half-timbered work without causing a very serious wrench to the feelings of our pure-minded friends.

After all, I confess that, in matters architectural, I am a good deal of a Jesuit and believe that the end justifies the means. The first essential requisite of an architectural structure, according to my mind, aside from matters purely of strength and stability, is that it shall be beautiful; beautiful in the fullest meaning of the word, the beauty which results from proportions which please even if they cannot be subtly analyzed, beauty which satisfies the trained mind from its coherency, and beauty which will endure through at least the life of the one who created it. I am not arguing that the tall building of to-day is an altogether desirable feature of modern civilization. It is an outcome of necessity, and there seems to be more reason to believe that our buildings of the future will be higher rather than that they will be lower. It is with us, and some of our architects have been able to demonstrate beyond question that it is possible to create a tall building in a thoroughly architectural manner which shall present a thoroughly pleasing *ensemble*, and the details, after all, will take care of themselves. And the question of absolute fitness of Renaissance, of the Gothic, Richardsonian or Sullivanesque need not trouble us half so much as the question of whether the completed building is yet architecturally beautiful.

But I feel I am wandering again from the exact limitations of my subject, and so to save myself I will recapitulate what, as a matter of individual personal feeling, I can safely affirm as my architectural creed anent these buildings. First, the most successful type of design is one which treats the front as a column with a marked base, square edged, rather small windows spaced regularly over a plain shaft, and a rich, blooming capital, proportioned to the height of the whole building. Second, the safest vehicle for expressing the ornamental details of a building is the Classic or the Italian Renaissance, because it is a style which was evolved under conditions much similar to our own, and it is one which affords infinite variety in mass, and the utmost delicacy and beauty in detail. And, finally, third, no matter what we do, if our hearts be true and our buildings beautiful.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

CHAMBER AND PARLOR MANTELS: "MAPPA." HOUSE OF W. S. WICKS, ESQ., TRENTON, N. J. MESSRS. GREEN & WICKS, ARCHITECTS, BUFFALO, N. Y.

[Gelatin Print, issued with the International and Imperial Editions only.]

AS the parlor mantel here shown is only a few years old it was not proper to include it with the other views taken at "Mappa" which will be published in Part V of the "Georgian Period." The chamber mantel dates from 1804.

"THE HOUSE ON THE ROCKS": TWO PLATES. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

THESE drawings picture not the mere workings of the designer's fancy, but a structure now nearly finished at a place on the New England coast, and show how one owner at least has materialized the airy castle of his boyhood's dreams.

NEW CHAPEL: ST. JOHN'S SEMINARY, BRIGHTON, MASS. MESSRS. MAGINNIS, WALSH & SULLIVAN, ARCHITECTS, BOSTON, MASS.

[The following named illustration may be found by reference to our advertising pages.]

CASTLE HAARZUYLENS, HOLLAND: TWO PLATES. RESTORED BY DR. CUYPERS, ARCHITECT.

THESE plates are copied from *The Builder*.

[Additional Illustrations in the International Edition.]

THE OFFICE: HOTEL MANHATTAN, 42D ST. AND MADISON AVE., NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatin Print.]

RECEPTION-ROOM: HOTEL MANHATTAN, NEW YORK, N. Y.

[Gelatin Print.]

CORONET THEATRE, NOTTING HILL GATE, W. LONDON, ENG. MR. W. G. R. SPRAGUE, ARCHITECT.

A CORNER OF THE QUEEN'S TEA-ROOM: THE HAGUE, HOLLAND.

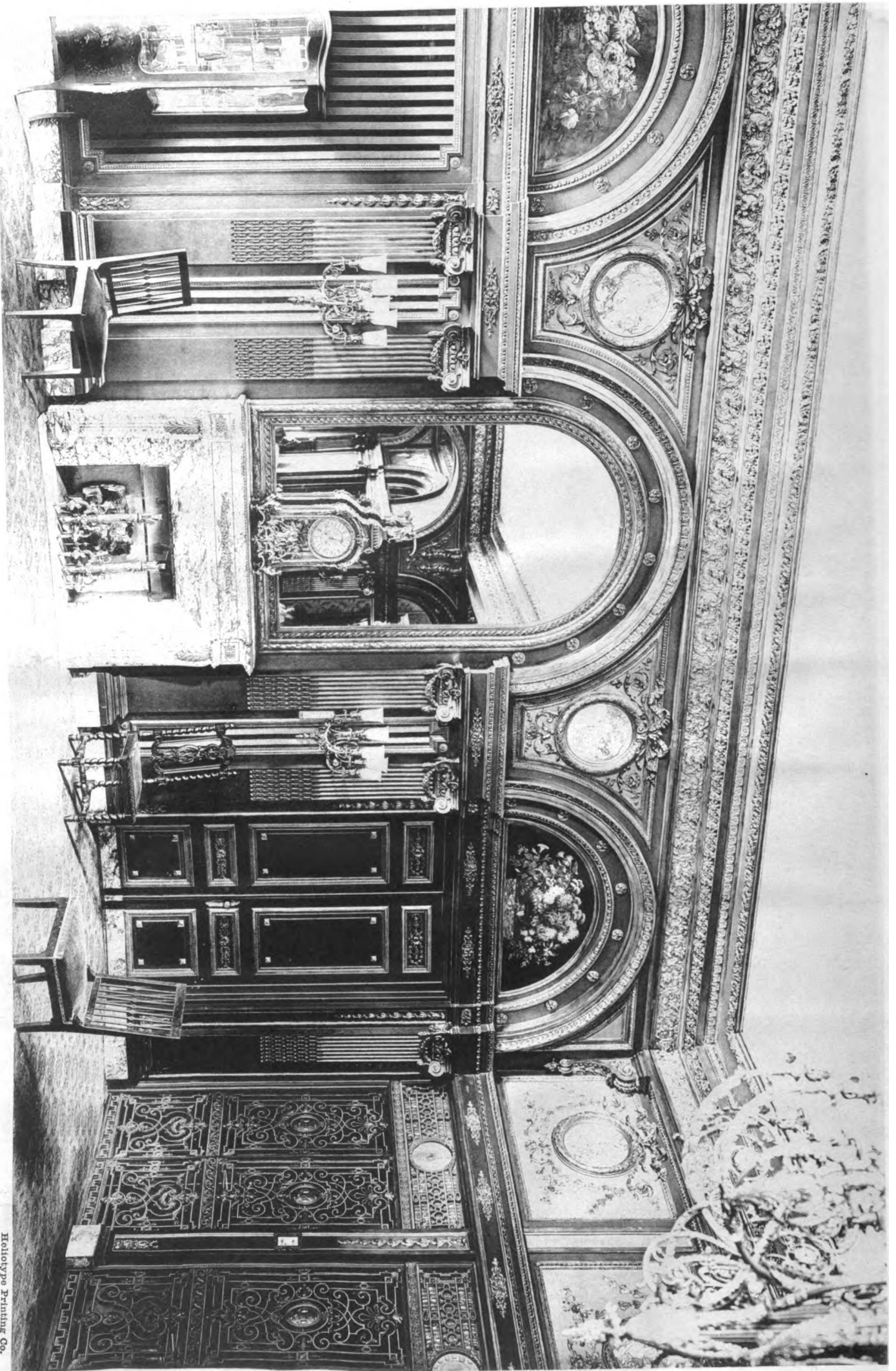


ELECTRIC HEATING.—The new Carmelite Hospice on the Canadian side of the Niagara Falls is provided with complete electric heating and cooking apparatus, and the following description of the installation, taken from the *Electrical World and Engineer*, is printed in *Science Abstracts*: "Three-phase current at 2,200 volts is carried on No. 3 bare copper-wire from a supply-station distant two miles. It is transformed to 110 volts by two 30-kilowatt and one 25-kilowatt transformers at the Hospice. A switch-board, with double-throw switches, controls two phases of the current, and the third phase is controlled by an adjacent switch-board, and is used for cooking, lights, etc. Power amounting to 100 horse-power is taken by contact, 25 horse-power of which are used for lighting (200 16-candle-power lamps), cooking, and heating water, while the remaining 75 horse-power is applied to heating the lower floor, containing eleven bedrooms, dining-room, reception-room and corridor. Each bedroom is 15' x 12' x 10' high, and contains one 4-horse-power heater, with two heats. The corridor is 120' x 15' x 10' high, and contains nine 4-horse-power heaters. The kitchen contains one electric range and three ovens. The range has 6 square feet of heating-surface, each square foot consuming 15 amperes, and having a two-heat switch. The small ovens take 23 amperes at 110 volts, and the large one 50 amperes. Four 25-pound roasts can be handled at one time. The pantry has three 5-gallon electric urns for tea, coffee, and hot water. Close to the switch-board are two electrically-operated boilers, one holding 400 gallons and the other 150 gallons. The former, which supplies the laundry and baths, takes 120 amperes and has three heats. The latter supplies the kitchen, and takes 125 amperes, being principally used for quick boiling. On the opening day the kitchen electrically cooked dinner for 250 people. The big boiler will heat water from 60° Fahr. to 212° Fahr. in six hours. The small ovens bake bread in 18 minutes. The large oven is furnished with a thermometer. The current for water-heating, cooking and lights costs \$25 per horse-power, or \$625 a year, while the 75 horse-power used in warming the building is secured at about one-fifth of this price per horse-power. The plant, as a whole, requires little care for its operation, and gives great satisfaction."

PHOTOGRAPHIC SCULPTURE.—Herr Selke, a German inventor, has patented a new photographic method of forming high-relief photograph sculpture. The method is rather complicated, but is wonderfully effective. The model is seated on a chair, surrounded by a mysterious-looking apparatus. At a short distance away there is an arch of electric lamps, one above the other, the light being softened by the use of light-blue glass. Nearer the model, and rising over his head, is a second arch of photographic plates, a few inches wide, and connected together by joints. This nearer arch can be moved forward by a mechanical contrivance connected with the photographic apparatus erected in front of it, and is intended to throw a shadow from all three sides on the model. As it moves forward, the long sensitive film used for instantaneous photographs is moved behind the glass of the apparatus by the quick turning of a winch in the dark interior of the camera. This shadow produces an unbroken series of so-called "photographic cuts" of the model, from which continually decreasing undarkened parts are fixed on the film at the rate of about fifty within a few seconds. When that has taken place, the sitting is at an end. These photographs are enlarged on cardboard, each being then accurately cut out with a fine saw. They are laid one upon another at the same distances as the first profiles and firmly fixed, so that the whole series of all the photographs of the model are pasted up one upon another stepwise. As these steps are very low and flat, they are hardly perceptible in themselves, and the whole gives the impression of a relief similar to the original model. This is then covered with a viscid stucco-like material and the mould is ready for slight finishing touches with the modelling tool. The photo-sculptures which I saw to-day at a public exhibition are excellent, and very like the originals. — *Berlin Correspondence* (October 10) *London Standard*.

PUMPING OUT THE HUDSON RIVER TUNNEL.—The task of pumping out the Hudson River Tunnel, on which work has so long been suspended, has again been begun in Jersey City. This resumption of work at the Jersey City terminus is accepted as an indication that the funds with which to continue the construction of the tunnel will soon be secured. The property was sold last June, under foreclosure proceedings, by Randolph Parmley, as master in chancery, and ever since then a number of English capitalists have been interesting themselves in the project. Eight men were at work at the mouth of the tunnel, foot of Fifteenth Street, Jersey City, putting things in readiness for further boring. — *N. Y. Evening Post*.

Negative by H. H. Sidman.



RECEPTION-ROOM: HOTEL MANHATTAN, NEW YORK, N. Y.

H. J. HARDENBERGH, ARCHITECT.

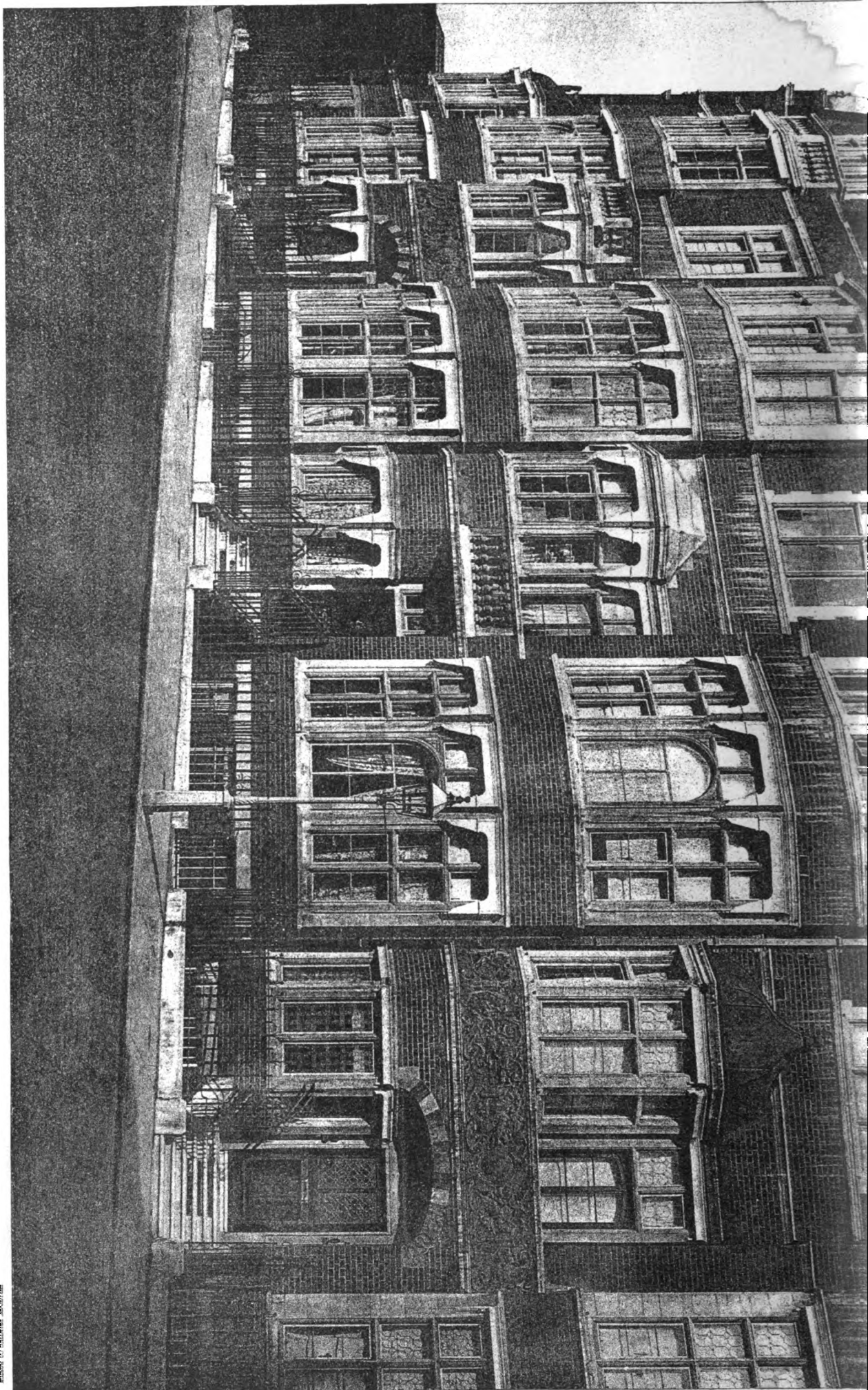
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PARLOR AND CHAMBER MANTELS: "MAPPA." HOUSE OF W. S. WICKS, ESQ., TRENTON, N. J.
GREEN & WICKS, ARCHITECTS.



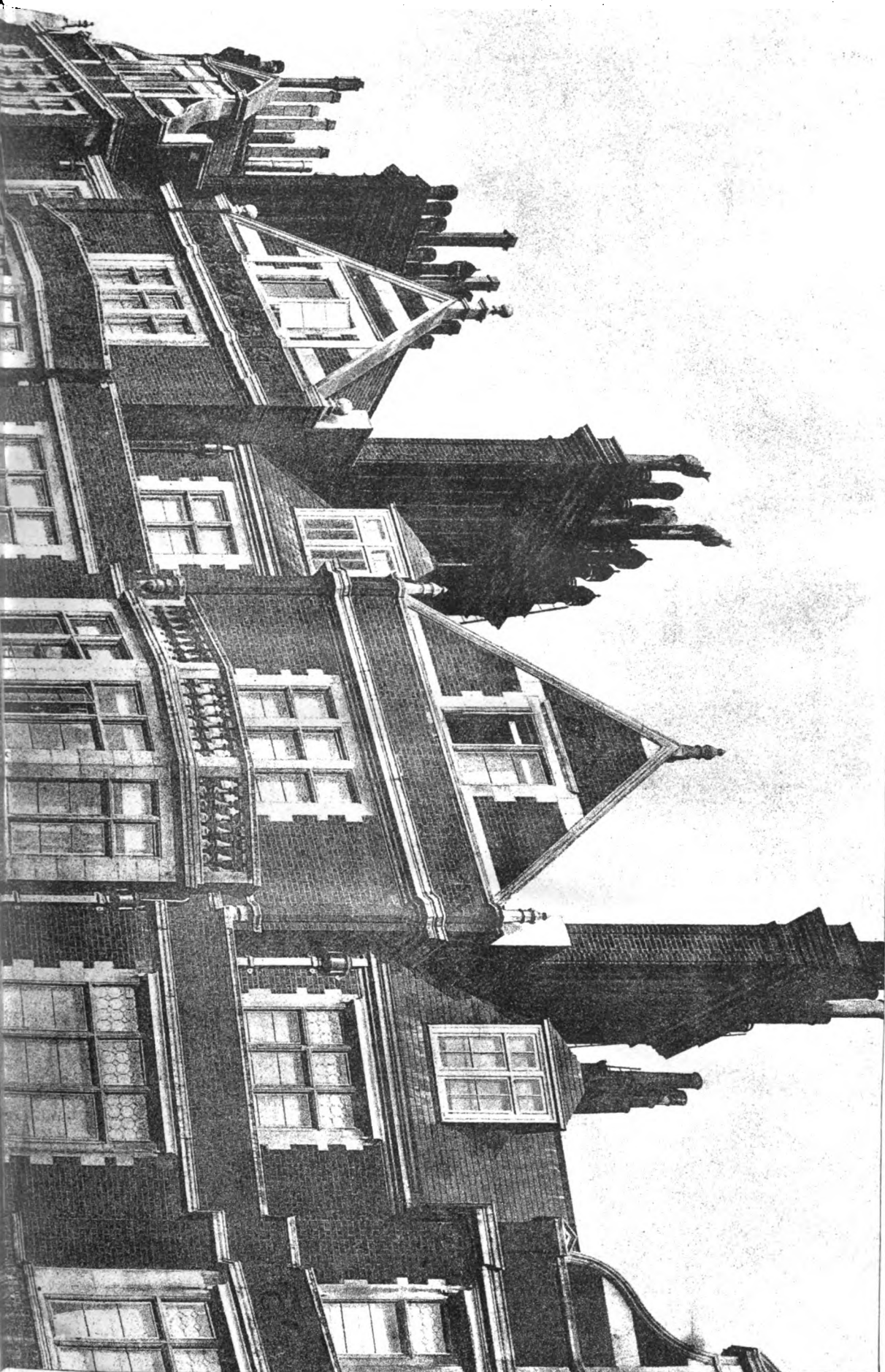
CARLOS PLACE, GROSVENOR SQUARE.
Messrs. ERNEST GEORGE & PETO, Architects.

WALL CUTTING, FARMINGHAM, 1894, 1895

EMERSON ARCHITECT AND BUILDING DEWS, DEC. 9 . 1899.

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DECEMBER 9, 1899.



SUMMARY:—

The General Movement to combine Local Art Societies into Larger Federations.—The present Phase of this Movement in New York.—The Desirability of a National Commission of Fine Arts.—An English Builder sued on a Withdrawn Bid.—The Court rules him Responsible in Damages.—The Legal Principles involved.—A similar Case in American Practice and its Result.—The Smith Monument in Fairmount Park, Philadelphia.	81
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Glasgow Cathedral.	
Additional: The Porte Cochère "Wyndhurst," House of John Sloane, Esq., Lenox, Mass.—The Neustädter Thor, Tangermünde, Prussian Saxony.—The Library: Caversham Park, England.—Carlos Place, Grosvenor Square, London, Eng.	88
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WHAT will be the result of the tendency which is to be observed throughout the country to combine local societies connected with various branches of fine-art into federations, which, while leaving to their component parts their independent existence, can exert, on occasion, a united and powerful influence in regard to subjects which have a common interest for all their members, it would be difficult to say; but that these federations are destined to play an important part in the development of American art cannot be doubted. In New York, where the system has been longest established, the Municipal Art Society, as the federation is called there, is treated by the public authorities with a respect which is most edifying, and its recommendations are, as a rule, carried out with almost comic alacrity by a city government which is, to say the least, not noted for the intellectual and artistic training of its members; and, in smaller towns, the power of a similar association, which is likely to represent a larger proportion of the community, and to have its work less interfered with by private jealousies than it is in New York, should be still greater. Even supposing it, however, to be proportionately the same, it would have, as we see in New York, an almost overwhelming influence in suggesting and promoting public improvements, in giving a wise direction to the expenditure of public money on works of art, and in uniting the resources and efforts of the lovers of the fine-arts in managing exhibitions and giving prizes; while, through these various activities, which would be infinitely more conspicuous if carried on in this way by an important organization, representing a large constituency, than if divided up among many independent bodies, it would attract the interest and attention of the public to artistic matters with an effectiveness which is beyond the reach of any other agency. If these municipal federations should multiply, as we trust they may, it would not be long before a rivalry would spring up between them, which would greatly stimulate them and their members, and, in consequence, the communities which they represented, and it need hardly be pointed out that this local rivalry has always been necessary to the highest development of art in any country. It seems now extravagant to say that the art-museums of the twenty-fifth century all over the world may have galleries labelled "School of Michigan"; or "School of Central Ohio"; or "Early New York School," where myriads of people will refresh their souls from the works of the great American masters of painting and sculpture; or that Commissioners of Conservation may, five hundred years hence, have in charge the precious remains of the American architecture of the twentieth century; yet the present intellectual, material and moral condition of our population

is extremely favorable to a rapid development of the arts, and nothing could do more to initiate such a movement than the spread of the system of which New York and Detroit furnish examples.

THE proposition for the consolidation of all the artistic societies in New York, for the purpose of enabling them to hold an exhibition each year in the interest of all the arts, and, in general, for promoting the mutual assistance which artists in this country need so much, seems to have excited a great deal of public attention, and the movement may, perhaps, be productive of good to art and artists. That the combined societies, even with the help of their friends, are ever likely to be able to build an immense exhibition building in the business district of the city, we do not believe, nor do we think that a combination of artists for the purpose of hiring able salesmen for their works would meet with favor, either from the public or from the artists themselves; but that there is a crying need of some great annual exhibition of the fine-art of the year, like the *Paris Salon*, or the *Royal Academy Exhibition* in London, where all the good work produced in the country can be shown, and the best of it rewarded with prizes worth contending for, is certain. Whether a combination of the present local societies in New York is the best agency for providing such an exposition is a very different question, and one which cannot be answered without a knowledge of the way in which the large organization would be formed, and its affairs managed afterwards. It may be taken for granted that any suggestion of its control by a clique, or by a combination of cliques, would be at once fatal to its usefulness; and the suspicions of attempts to use the influence of an association for private ends which have occasionally, although, as we think, unjustly, fallen upon certain of the individual artistic societies in New York, should be made impossible by throwing open the doors of the annual exhibition to the whole American world of art, and by leaving the choice of the jury to the competitors, or in some other way satisfying people outside the societies that they will have fair treatment. It is hardly necessary to say that an exhibition confined to the work of members of the societies concerned would have very little interest; and, as the New York artistic societies have always been very liberal in welcoming the work of outsiders, there is no probability that anything of the kind would be thought of; but the people who live in great cities are always regarded with distrust and jealousy by those who do not, and members of artistic societies are always the object of suspicion and detraction among their rivals outside; while artists are, of all people, perhaps the most inclined to mutual recrimination and criticism, and to jealous panics, which continually upset the plans made for their welfare; and all these circumstances must be considered in trying to arrange for anything like united effort on their part.

TO those of us who look forward to the time when American streets and American buildings shall be the most beautiful on earth, and shall be adorned with pictures and statues conveying to the beholder, with a power never known before, the noblest sentiments of the American mind, clothed in forms of perfect beauty, the prospect of uniting in harmonious coöperation the people who now take such delight in sending sneers at each other to the newspapers does not seem brilliant; yet something of the kind must be done if American art is to be supplied with the incentive which is now necessary to its progress. The natural way to accomplish the end would be for the National Academy of Design, or, let us say, the Fine-Art Commission of the United States, or some such body, holding an undisputed superiority, by virtue of its age or official rank, over all the other artistic societies, to provide for a great annual exhibition, with suitable rewards in the shape of prizes and medals, and, let us whisper, of gratuitous advertising, with the aid of all the other societies as subordinate in authority. Unfortunately, the National Academy of Design, which is, under its present constitution, partly a rival of the other societies, is not likely to take the initiative in any such enterprise, and the United States has no Fine-Art Commission, and if it had one, there is not much probability that its powers would extend to participation in such affairs; so that there seems to be nothing for the artists and art-lovers of the country to do but to work out a plan for themselves. At present, we must

confess that we have not seen any plan described that seemed to us very likely to be successful, but the object to be attained is well worth all the perseverance and tact that can be devoted to it.

AN interesting case was recently decided in England, involving the question of the validity of a contract consisting simply of an offer and its acceptance. A certain owner wished to make additions to his house, and had plans and specifications drawn up, and invited certain builders to bid on them. One of the firms of builders, after examining the plans and specifications, sent to the owner the following letter:—"Our estimate to carry out the sundry alterations to the above premises according to the drawings and specifications amounts to the sum of £1,230." The day after receiving this letter, the owner wrote to the builders, saying that he accepted their "offer to execute for the sum of £1,230" the work specified. After a time, he received another letter from the builders, saying that they had made a mistake in their figures, and withdrew their estimate. The owner then had the work carried out by another builder, at a higher price, and subsequently sued the first contractors for the difference between their estimate and what he had actually been obliged to pay, as damages for breach of contract.

THE builders fought hard, and the case was finally decided in the Queen's Bench Division of the High Court of Justice. Of course, the effort of the defendants was to show that the estimate and its acceptance did not form a binding contract, and that they were therefore not liable for damages for withdrawing from it. They brought several builders, who testified that it was a custom of the trade to give estimates in the form which was used in the present case merely as a sort of expression of opinion, while a definite proposal would have been made in such words as "we offer to execute the work"; and they further contended that, as the clause in the specification stipulating the time within which the additions should be completed was left blank, the owner could not have understood that he was making the final bargain for the work. The Court, however, rejected both these contentions. In regard to the omission of any stipulation as to the time of completion, it said that this simply left it to be implied that the work should be finished within a reasonable time; and as to the claim that the estimate of the defendants was, in accordance with a custom of the trade, merely an expression of opinion, and not a definite offer, it said that there was no such custom, and that if there were any it was contrary to the law. The question was not one of customs, but of what each party intended that the other should understand by his letter. In the opinion of the Court, there was no doubt that the builders intended the owner to understand their letter as an offer to do the work for the sum mentioned; and that the owner intended his letter to be taken as a definite acceptance of a definite proposition. These two things were all that was necessary in law to form a complete contract, to which either party could hold the other, and if the builders had made a mistake in their figures they must abide by the consequences; and judgment was accordingly given in favor of the plaintiff for two hundred and fifty pounds, and the costs of the suit.

BOTH the *Builder* and the *British Architect* comment on this case, and both of them, as we think, make mistakes in regard to the legal principles concerned. The *Builder* says that "where a builder, in reply to an inquiry, says that his estimate to carry out certain work is so much, there is no contract. Where, however, a building owner replies that he accepts the offer, then there is a completed contract." This is quite misleading. If a builder, in reply to an inquiry or otherwise, says that he estimates the cost of a given piece of work to be a certain sum, both parties understanding and intending this to be simply an expression of his opinion in the matter, no acceptance by the other party can convert the opinion into a contract; and, on the other hand, if an owner offers plans and specifications for definite tenders, he has a right to assume that the replies that he receives will be definite proposals, and, as those who send them know that he will so consider them, they ought not to be, and will not be, allowed to escape responsibility for them by vague wording. It is, in fact, very common for both builders and owners to try to get the better of each other by evasions of this sort, and if the law of the matter were

better understood, many losses of money and temper might be saved. It is very common, for example, for an over-sharp owner to ask a builder to look over certain plans and specifications, and give him an idea of the cost of carrying them out, and subsequently, if he thinks it for his interest to do so, to notify the builder that "his proposal is accepted," and try to terrify him, by threats of claims for damages, into carrying out the work at a loss. This proceeding is exactly similar to that of sending in, where definite bids are asked for, "estimates," or some other vague proposals, which the builder who makes them imagines he can repudiate later, if he chooses. The law is the same in both cases, that a proposition must be construed as the one who makes it thinks that the other one will understand it. In the first instance, if the builder who makes the estimate supposes at the time that the owner will regard it as simply an opinion, it is an opinion only, and no pretended acceptance can make a contract out of it; while, on the other hand, a letter which the one who sends it knows that the one who receives it will consider to be a definite proposal is a definite proposal, whatever its wording, and, by an unconditional acceptance, is converted into a binding contract. With the moral question of taking advantage of a builder's mistake in figures, the present case has nothing to do. If the owner knew that the builder had made a mistake in his estimate and concealed his knowledge, his acceptance would be fraudulent, and not binding on the builder; but, where the parties act in good faith, it is certainly more for the interest of honest people that those who make mistakes should manfully stand by the consequences of them than that binding agreements, on which, it must be remembered, many other agreements often depend, should be set aside on the discovery of real or pretended errors in the calculations of one of the parties.

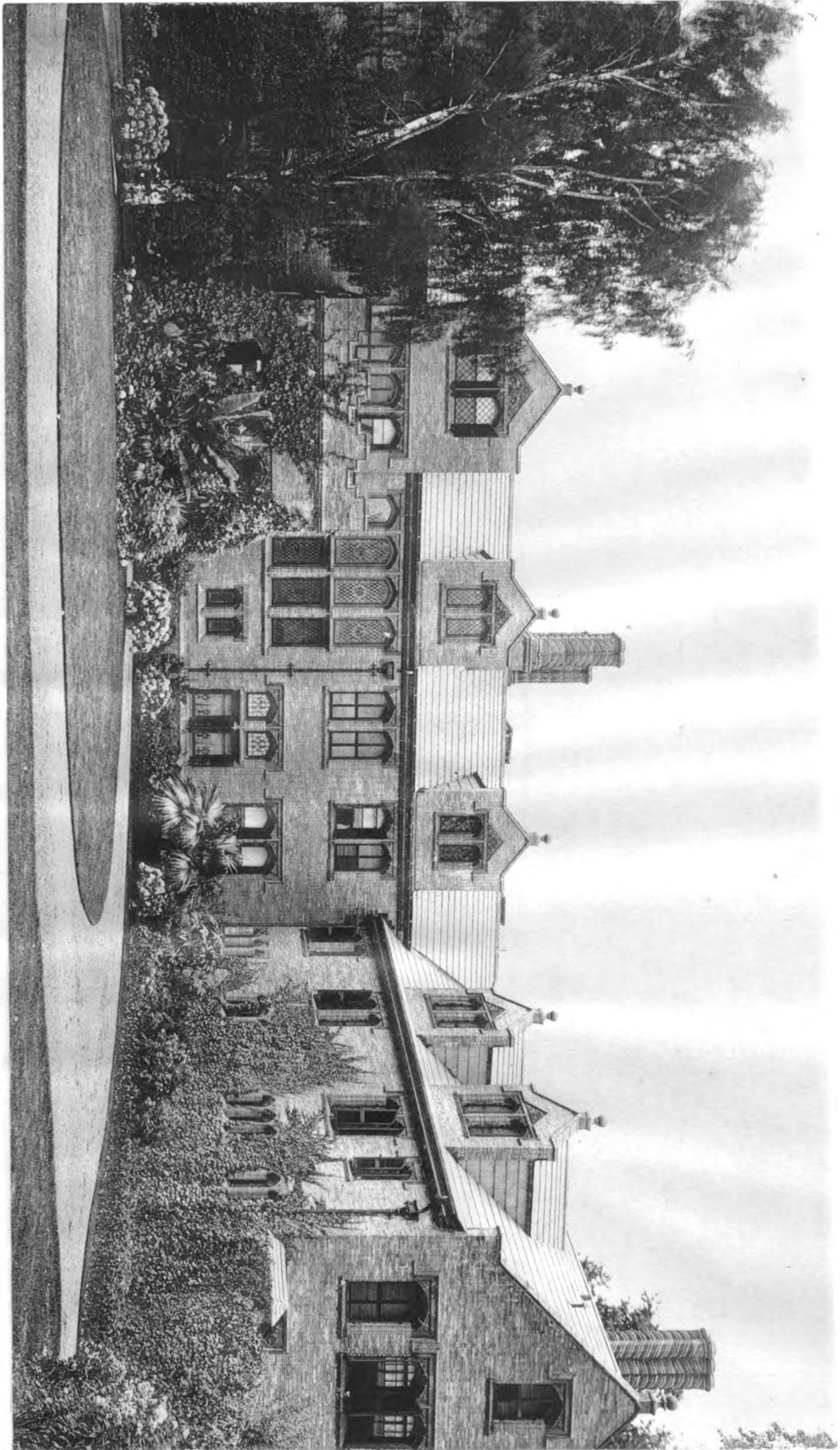
THE law in this country on the subject is the same as that of England. We remember a case in which an architect was requested to make drawings and specifications for an alteration. The project was afterward abandoned, and the architect had to sue the owner for his pay. The owner, at the trial, recollected, as he said, that he had told the architect that the cost must not exceed a certain amount, and the evidence showed that a bid had been received from a responsible contractor to do the work for a sum within the alleged limit, and had been immediately and unconditionally accepted; but that it had been withdrawn, subsequent to acceptance, on the ground that a mistake had been made in the figures; and that the owner had decided not to try to compel the contractor to do the work; and it appeared also that the other bids received were higher than the alleged limit; and on this ground the owner refused to pay the architect anything. The court held that, supposing the architect to have been properly notified of the limit within which the cost of executing his design must be confined, the offer to carry it out for a sum within the specified amount, and its unconditional acceptance, constituted a valid contract, which the owner might have enforced if he had wished to do so; and that the fact of his having concluded not to enforce it, even though it was shown that the architect advised him not to have his work done by unwilling contractors under compulsion, gave him no right to claim that the architect had not fulfilled what he asserted to have been the instructions given him.

A MONUMENT is in process of erection in Fairmount Park, in Philadelphia, to the memory of the late Richard Smith, which is to cost half a million dollars, and will otherwise form one of the most interesting structures in the city. The idea of the architect, Mr. Windrim, is to divide the design into two portions, each consisting of a sort of colonnade, forming in plan an arc of ninety degrees, and terminating in a pedestal, on which stands a single gigantic column, supporting a colossal statue. The two statues, with the columns on which they stand, are separated far enough from each other to allow the main driveway of the Park to pass between them, the curved screens diverging on each side, so as partly to enclose one of those circular deserts, or "concourses," formerly beloved of park commissioners. Places are provided on the structure for a large number of statues, and Messrs. Daniel C. French, William Ordway Partridge, Paul W. Bartlett and J. Q. A. Ward have been already commissioned to execute the most important ones, while niches will be filled by works from the hands of Messrs. Bissell, Gaffay, Calder, Eschiel and Murray, and Misses Bessie C. Potter and Katherine M. Cohen.



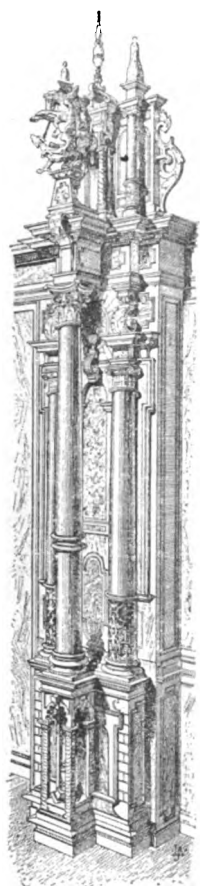
THE NEUSTÄDTER THOR, TANGERMÜNDE, PRUSSIAN SAXONY.

Negative by H. H. Sloman.



Heliotype Printing Co.

THE ENTRANCE FRONT: HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS.
PEABODY & STEARNS, ARCHITECTS.

THE LEGITIMATE DESIGN FOR THE CASING OF STEEL-SKELETON STRUCTURES.¹

Wainscoting in the Furst-
eneckzimmer, Frankfurt-
on-the-Main.

WHEN we ask ourselves what is the legitimate form or style of design to be adopted in connection with the skeleton-construction of buildings, we implicitly assume that there is some necessary connection between the design of a building and its structure; we assume that buildings must express structural qualities in their design if they are to be considered to be works of art. I have no doubt that many of you will be surprised that I think it worth while to call your attention to so self-evident a fact; and some may even feel some resentment that I take your time in discussing what you have come to look upon as an accepted principle of the art we practise; but I think it quite worth our while, before we argue concerning a subject which involves so broad an assumption, to examine the assumption itself with some care. As you will see, if you follow me to the end, I, myself, think this assumption, with some important qualifications, is warranted, and that the dogma to which it leads is of value to us; nevertheless, I do not think it can be held to be true in the form in which it is usually accepted, and this becomes clear when we note that if we accept this dogma, without limitations, and in connection with it study carefully contemporaneous buildings, we cannot help coming to the conclusion that architecture is, for us, a lost art. Indeed, we are compelled to go much farther, for serious defense of this dogma, in connection with the study of the buildings which have come down to us from the past, must convince us that no such thing as architecture has ever existed, and we must find ourselves led to the view, which seems to be maintained by at least one of our best-known architectural writers, that architecture ceased to exist long before any buildings were constructed of which any examples are now extant.

It is apparent from the words just uttered that I do not accept this dogma as valid; yet let me repeat that, in a way, I trust to it, and try in my practice to work by it; but this not because I believe that it is exactly true as usually stated, but because I believe that it covers a real truth, which we will do well to try to comprehend clearly.

The real guiding principle which is back of this dogma may best be brought to light if we note that this special architectural dogma is but an expression in relation to architecture of the general dogma of artistic realism.

This general dogma may be stated thus: "Fine-art is the expression of the true essence of the subject presented by the artist." This is a dogma not difficult to uphold if it is applied to literature alone, as it is by the literary realists of our day. But if we attempt to apply it to all fields of art, we at once find reason to doubt its validity; for evidently it does not apply to music, for instance, which clearly cannot be described as the expression of the true essence of the subject presented by the musical composer.

This difficulty has been met by restatements and limitations of the principle in relation to special arts, and the doctrine to which I am now asking your attention is the special adaptation of this suppositious principle to make it in some measure fit in with the actual facts of architectural development and practice.

Before discussing this special adaptation to architecture we may note for a moment one special ground for doubting the validity of the general principle of artistic realism, beyond the fact, just mentioned, that it must be restated and adapted to make it applicable to all the arts. This special ground is this: that if we consider the matter with the least care we at once note that, far from attempting to express anything like the full truth, each of the arts is based upon the deliberate acceptance of conventional falsities. The sculptor depicts beauty of form in *living* beings, but to do this in the best way he finds it necessary to use *lifeless* material, and, furthermore, to assume a falsity of colorlessness. The painter assumes a falsity, in depicting form on *plane* surfaces; he adopts conventional "keys" in the management of color, which are far and away from the "key" of nature. The draughtsman in black and white goes a step farther and assumes a falsity of colorlessness, expressing his thought in mere relations of shade and shadow. The dramatist assumes falsity of *entourage*, and the romance writer merely describes action, in place of truthfully presenting action; and to this the poet adds further falsifications of reality, in adopting rhyme and rhythm.

It were easy to show, were this the appropriate place, that these conventional assumptions of untruth in all the arts are adopted because thereby the artist is enabled to gain more of beauty than were

otherwise possible; but they, in my opinion, completely silence the upholders of the thoroughgoing doctrine of Artistic Realism.

Turning now again to the special adaptation of this doctrine to our own art, we find that it is held in something like this form: It is assumed that the essence of good architecture consists in its expression of practical and constructional truth; and that a building to be an architectural work must, first, express in its design constructional values, and, second, must suggest upon its exterior the uses of the interior. Let us consider these two assumptions in reverse order.

Without doubt, certain indications of the interior uses in the exterior design of a building are sources of satisfaction to the intelligent observer; but to hold that all such expression is beautiful becomes a manifest absurdity when we consider that if we carried out such a notion we should, in designing a work of perfect beauty, feel compelled to express, on the exterior design, the function of the most menial offices of a building, the existence of which must actually be entirely forgotten if we are to gain an impression of lasting beauty from the whole mass. Evidently we may express use in our design, but we cannot afford to do so unless this expression is inherently beautiful.

Turning now to the first assumption mentioned, here again we note that while no one will question the æsthetic value of certain expressions of constructional function, on the other hand it is manifestly absurd to claim that all expression of constructional function is necessarily æsthetic; for to make such a claim one would have to hold that all first-rate engineering structures are inherently æsthetic. Thought of the æsthetic horror of the average, structurally effective, cantilever bridge, for instance, suffices to answer any such argument. Evidently, then, we may express constructional function in the designs of our buildings, but we cannot do so properly, as artists, unless this expression is beautiful.

We may now, with advantage, look back again, for just a moment, to the general doctrine of Artistic Realism, to gain some inkling of the direction in which we should look for the truth which is veiled by the architectural dogma we are considering. A thoroughgoing examination of this doctrine of Realism, which I have made elsewhere, but which I have no time even to review here to-day, leads us to the conclusion that the dogma which we treat as a positive principle is really only a negative one. We note certain experiences of ours which give us a sense of ugliness, and we conclude that could we produce *opposite* experiences we would obtain a sense of beauty, which itself is the opposite of ugliness. But this is, of course, an illegitimate conclusion.

We note that unreality, untruth, is disagreeable and ugly, and we, therefore, thoughtlessly conclude that if we can manage to express reality and truth we shall gain an expression of beauty. But such a conclusion is manifestly absurd. If we avoid untruth, unreality, we shall, of course, avoid all such ugliness as is bound up with this untruth and unreality, but we shall not in that fact gain beauty; we shall gain merely the pale, uninteresting absence of ugliness.

If now we apply these considerations to our own art, we note that they teach us two important lessons. They teach us, first, that we must avoid pretense of constructional effects which cannot exist; in other words, we must avoid lying about our construction; for all such lying and pretense is disagreeable and ugly. But having done this we must, as strenuously, avoid expressions of structure which are not beautiful. I must not be misunderstood to mean that the beautiful expression of structure is an unimportant element in architecture. On the other hand, I think it a most important element. But what I do hold is that it is only one of many elements of which I may mention, as other examples, symmetry, composition, proportion, color, which have no relation whatever to logical truth. Indeed, the more beautiful expressions of structure we can incorporate in our buildings the better; but it is the beauty in all cases which counts, and expressions of structure which are not beautiful are not to be condoned on any account.

A similar argument might be presented in relation to the expression of the use of the interior of a building in the design of the exterior; but, as that relates but little to the subject of our present discussion, I shall pass it over with this brief mention.

I shall now ask you to consider with me a second application of our theoretical study, which has a direct bearing upon the subject of this discussion.

There have come down to us from our architectural ancestors many beautiful forms which have had their origin in constructional usage, more or less illogical, as we, with our superior engineering knowledge, now see. They are beautiful *per se*, and are so because they have been perfected by long series of experimental efforts to attain to beauty. Such, for instance, are certain forms of the arch, certain orders of columns, pilasters, cornices, mouldings, etc. These forms have become for us æsthetic elements of intrinsic beauty, and capable of employment as such for purely decorative purposes.

I see no reason why we as artists should not use them thus, as decorative elements, if we make no pretence that they have constructional function. In thus using them we indeed find it easy to go too far; in thus using them we tend to make ourselves decorative architects and fail of the highest possible architectural ideals; but we must not forget that it is impossible for any of us, as it has been impossible for any of our architectural ancestors, to avoid altogether such decorative use of old constructional forms; nor must we forget that if we logically eliminated all such forms we should deprive

¹ A paper read at the Thirty-third Annual Convention of the American Institute of Architects by Mr. Henry Rutgers Marshall.

ourselves of most of the beauties which we find of value in all existing architectural works.

It is not necessary for me to remind you that even the beautiful arch forms used on our exteriors do not indicate in any accurate way the lines of thrust; and that the arch which is proportioned accurately to accord with the forces acting upon the several *voussoirs* is a form most shocking to contemplate, and one which on this account is discarded even by the engineer.

In turning now to a brief consideration of the application of our contention to the special problem of the exterior design of steel-skeleton structures it may be well to review the points we have made. We have learned:—

First.—That we must avoid lying about our structures, for the simple reason that deceit is disagreeable and therefore ugly as soon as it is discovered. Nevertheless,

Second.—That for the sole purpose of adding beauty to a building there is no objection to the use, in a purely decorative way, of beautiful forms which have in the past been evolved because of constructional values other than those very markedly appropriate to our building, provided they are not used in a way that will deceive. This has always been the practice of architects in the past, and only by slow steps have styles been evolved in which decoration altogether inappropriate to new structural demands has been eliminated. We may labor to this latter end, but we cannot hope to retain beauty in our structures if we concentrate our attention upon logical development rather than upon beauty of effect. We learn,

Third.—That the expression of structure is in itself one of the most permanently effective elements of architectural beauty, and that, therefore, it should be emphasized, but only so far as this can be done without destroying other equally or more important elements of beauty.

Fourth.—Whatever else we do, we should strive to produce beautiful buildings, whether we express structure and use or not; and while we should never forget that the expression of structure and use are among the most effective elements in an æsthetic result, nevertheless we should bear in mind that they are always of less importance than beauties of line and proportion and mass.

In the modern steel-skeleton structure our problem is the construction of a beautiful screen wall. We must make a screen which will protect the steel structure from injury, and at the same time protect the occupants of the building from the elements.

Now the simplest solution of this problem is the construction of a plain wall pierced at practically regular intervals with openings, and with no projecting cornices, and with no lines of shadow whatever. But such a structure can only in exceptional cases be anything but exceedingly ugly. We are bound to try to make it interesting, and to this end we ought first to attempt to divide our surface into masses of pleasing proportion, and this we may do by differences of color in the material used, or by the introduction of projecting parts which will divide the surface by means of the shadows cast.

With this end in view, I see no objection to the introduction of projecting cornices and even of applied Classical pilasters, or superimposed "orders," if you will; always provided these features do not pretend to be what they are not, and provided they are beautiful in themselves, as in our common practice is not always the case; and provided they divide the spaces into masses of beautiful proportions, as, I am free to confess, I think in our practice they seldom do.

Nor do I see any objection to the use of arches carried on piers running through many stories, which our friendly critic, Mr. Russell Sturgis, so much opposes; this again, however, provided there is no deception as to the interior structure or use, and *always* provided that the forms given to the mass are beautiful in their proportions and relations.

Having gained beautiful proportions, we should endeavor to beautify the subordinate parts by groupings of our minor openings and by appropriate ornament.

All this you will, perhaps, say is little more than a statement of platitudes. The question before us is whether we should make it our aim to express upon our screen wall the structure back of it. My answer to this is that if we ever evolve a perfectly satisfactory type of skeleton-construction building, it will inevitably, to a great extent, express this structure behind the screen; but I am convinced that the way to get at this happy result is to try to design a *beautiful* screen wall, for to do this we, of course, will incidentally have to see to it that it does not lie about the structure behind it. If we design in this way we shall be compelled to keep in mind the structure behind our wall, and presently, if we keep the thought of beauty always before us, we shall find that we are making beautiful buildings, and at the same time are expressing, to a great extent, their construction—as much so, at all events, as any other architects ever have done.

But let us never, on any ground, condone ugliness of proportion or detail. Let us never offer as a plea in extenuation of ugliness that our building is logical, that it truly expresses its internal use and its structural method. That is but the excuse of incompetence, and itself proves the man who offers such an excuse to be a builder merely, and not an architect. HENRY RUTGERS MARSHALL.

CELTIC RUINS IN SWITZERLAND.—Swiss archaeologists have decided that a certain ruin near Biel, which has been held to be one of the many Roman remains, is really Celtic, the only one of the kind in the country.—*Exchange*.

REPORT OF THE COMMITTEE ON EDUCATION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

YOUR Committee on Education has held no stated meetings during the year, but several members have met together on different occasions and have discussed the subject-matters of this report, and the Chairman of the Committee has corresponded with all the members.

Your Committee, following its recent policy of endeavoring to keep the profession informed as to the condition of architectural education throughout the country, presents a brief report with regard to the principal architectural schools, based on statements received from those in charge of the instruction in these institutions.

As to numbers of students and the character of the curricula, there are no marked changes since the last report, so that it does not seem worth while to repeat the statistics which were gathered last year. It would be well that such statistical tables relating to the schools should be compiled at intervals, say, of five years, and the Committee hopes that the policy here suggested may be pursued by its successors.

The Department of Architecture of the Massachusetts Institute of Technology reports the opening of what promises to be a prosperous year, with important additions in its equipment, both in accommodations in the library and the collection of casts.

After the fire, which last year destroyed the upper portion of the building occupied by the Department of Architecture, this building was repaired and largely devoted to other purposes, while an entirely new and commodious building with more complete appointments was built adjoining the old building. This gives to the already ample equipment of the Department of Architecture at the Institute of Technology, more ample and more convenient accommodations to meet its growing needs, including a fireproof room for the library. Professor Homer has just returned from Europe, where he has been engaged in making fresh purchases of casts for the department. During the year, Mr. Willard P. Perkins left to the Institute of Technology \$10,000 for the foundation of a scholarship or scholarships.

At Cornell the reorganized "College of Architecture" under Professors Trowbridge and Van Pelt is now firmly established and is beginning to produce promising results, as is shown by its recently published year-book. The first appointment has been made under the recently founded travelling-scholarship, which is peculiar in providing for two periods of residence in Europe with an intervening period of study at Cornell. Two resident scholarships in architecture have also been founded.

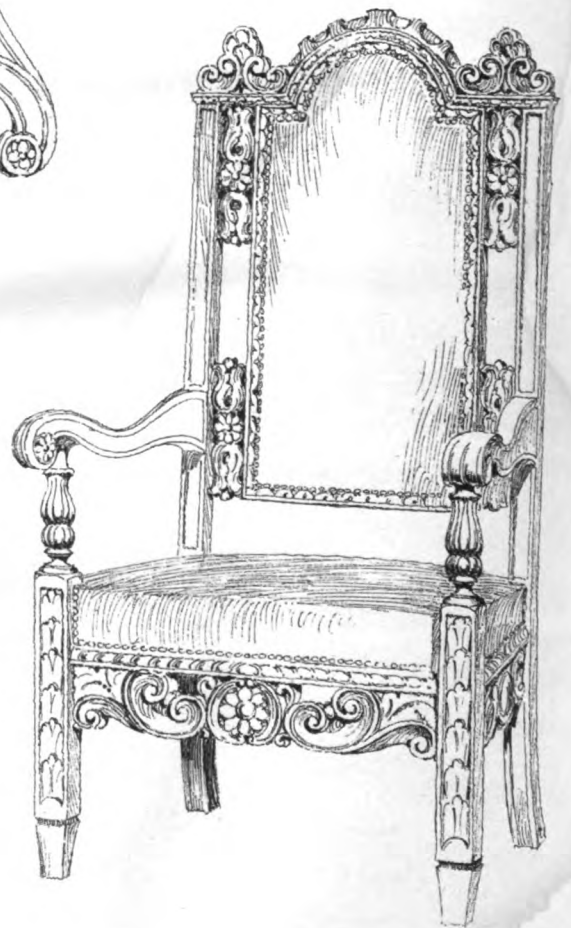
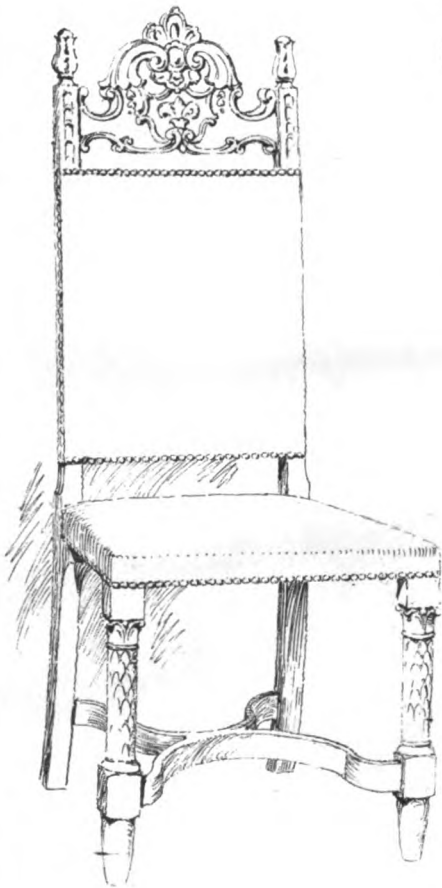
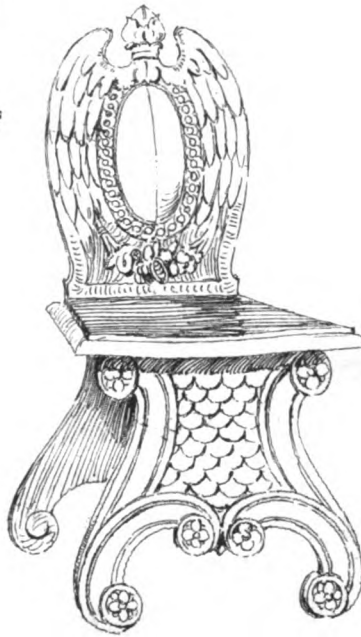
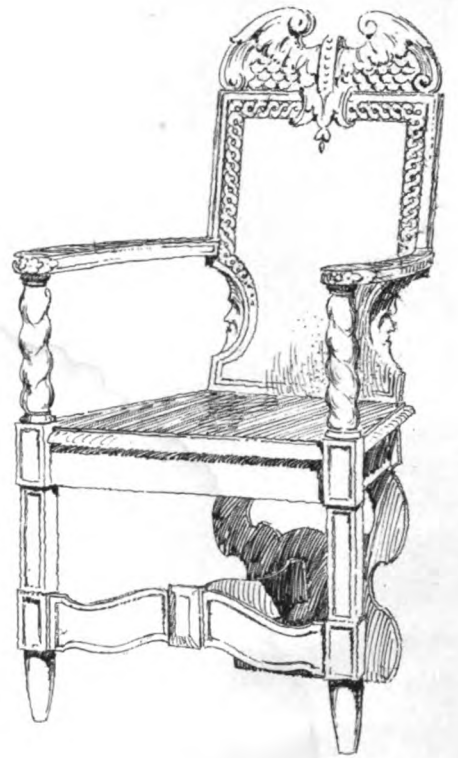
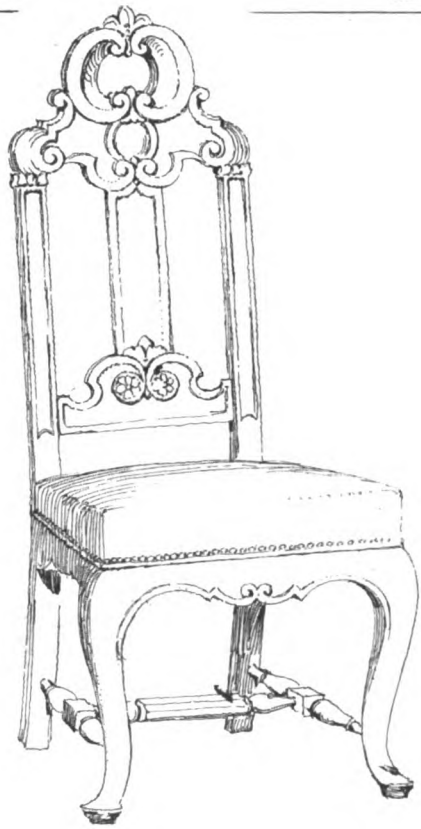
The College of Architecture at Cornell endeavors to follow the system of instructions of the École des Beaux-Arts of Paris in all its details more closely, perhaps, than any other American school, and devotes a larger proportion of its time than most of the professional schools to the work of architectural design pure and simple. It gains time for this by reduction in the time devoted to the history of architecture and the fine-arts, and to general studies.

Professor Ricker, of the University of Illinois, reports that the number of students diminished slightly during the hard times commencing in 1893, but is now increasing with excellent prospects for a larger attendance. The library of the department has been greatly increased during the past two years, so that it is now an excellent working library for students, superior in real value to any library in Chicago.

To all appearance the School of Architecture, of Columbia University, is just the same as it was two years ago. The teaching force was then increased by the addition of two instructors, Mr. Partridge and Mr. Hornbostel, and the school had just taken possession of its new and delightful quarters in Havemeyer Hall. The two years have been spent in growing up to the standard of these personal and material acquisitions.

Meanwhile, the methods have not changed, but have been more thoroughly and efficiently carried out, the characteristic features of the school being rather emphasized than modified. These are chiefly, first, the prominence given to historical studies, so that the collections, museum and libraries, and especially the Avery Architectural Library, may be utilized to the utmost; second, a graded series of exercises, bridging over the gap between the study of the orders and the problems in design; third, the entire independence of the school, so that it does its mathematics, mechanics and architectural engineering, and is able to do them in an architectural way; fourth, the concentration of time upon exclusively professional work, with a minimum of physics, chemistry, etc., so as to be able to cover all the ground in three years, leaving the fourth year as a sort of post-graduate year, almost entirely free from recitations and lectures. This fourth year is entirely given up to design and to the preparation of papers embodying the results of research in the libraries and museums.

The number of students has remained about the same, but the character of the classes has somewhat changed. Some years ago, a large number of students passed the entrance examination, but many of them, finding either that the course was too difficult, or that their own interest was deficient, soon fell away, so that classes that first and last numbered thirty-five or forty graduated only a dozen or fifteen men. The entering classes are now somewhat smaller, but seem to be made up of more lasting material, while the special facilities offered to professional draughtsmen have kept up the number by the addition of a dozen or twenty older or more experienced



CHAIRS DESIGNED BY P. G. GULBRANSON, ARCHITECT.



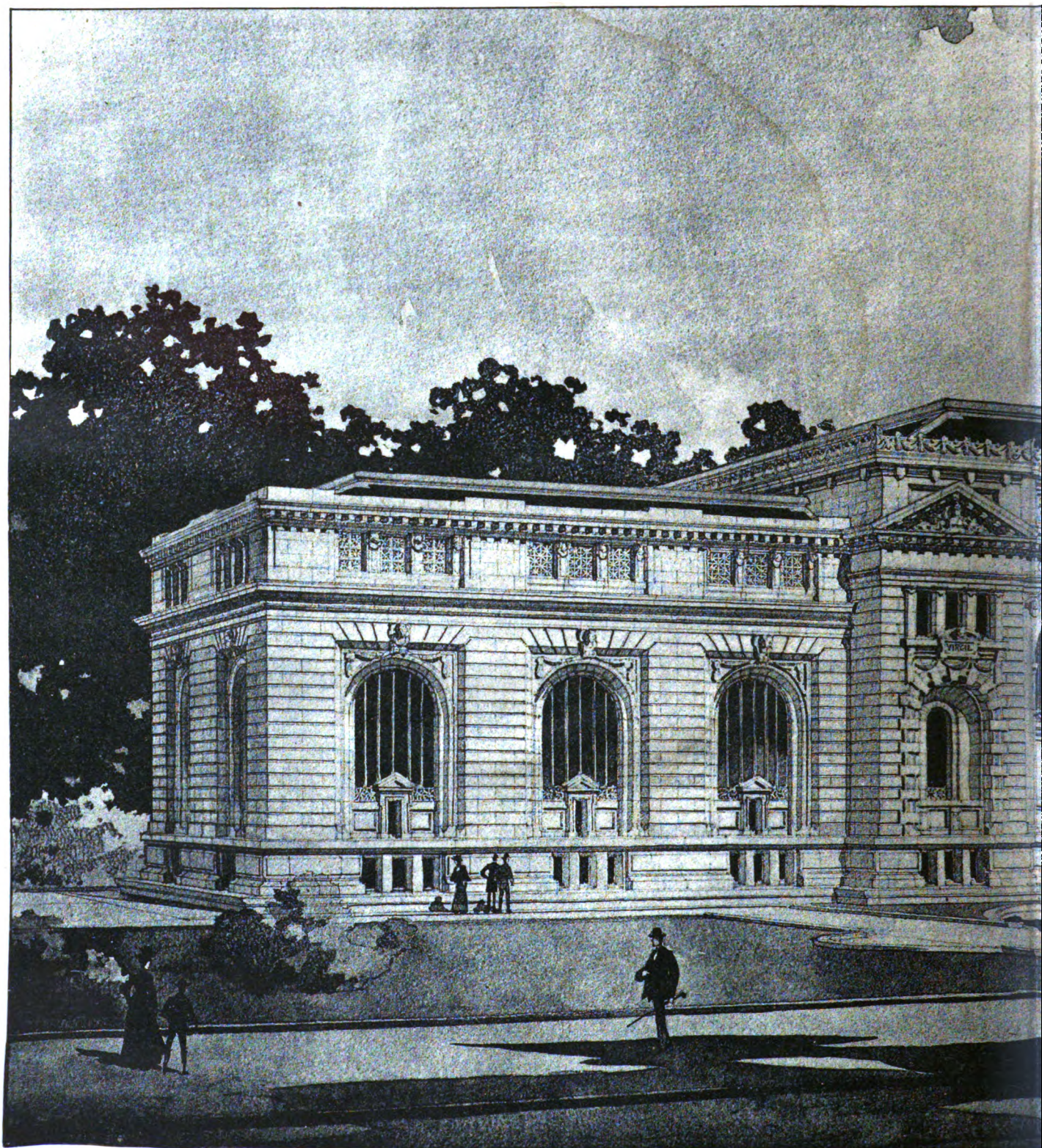
Negative by H. H. Sidman.

THE PORTE COCHÈRE: HOUSE OF J.
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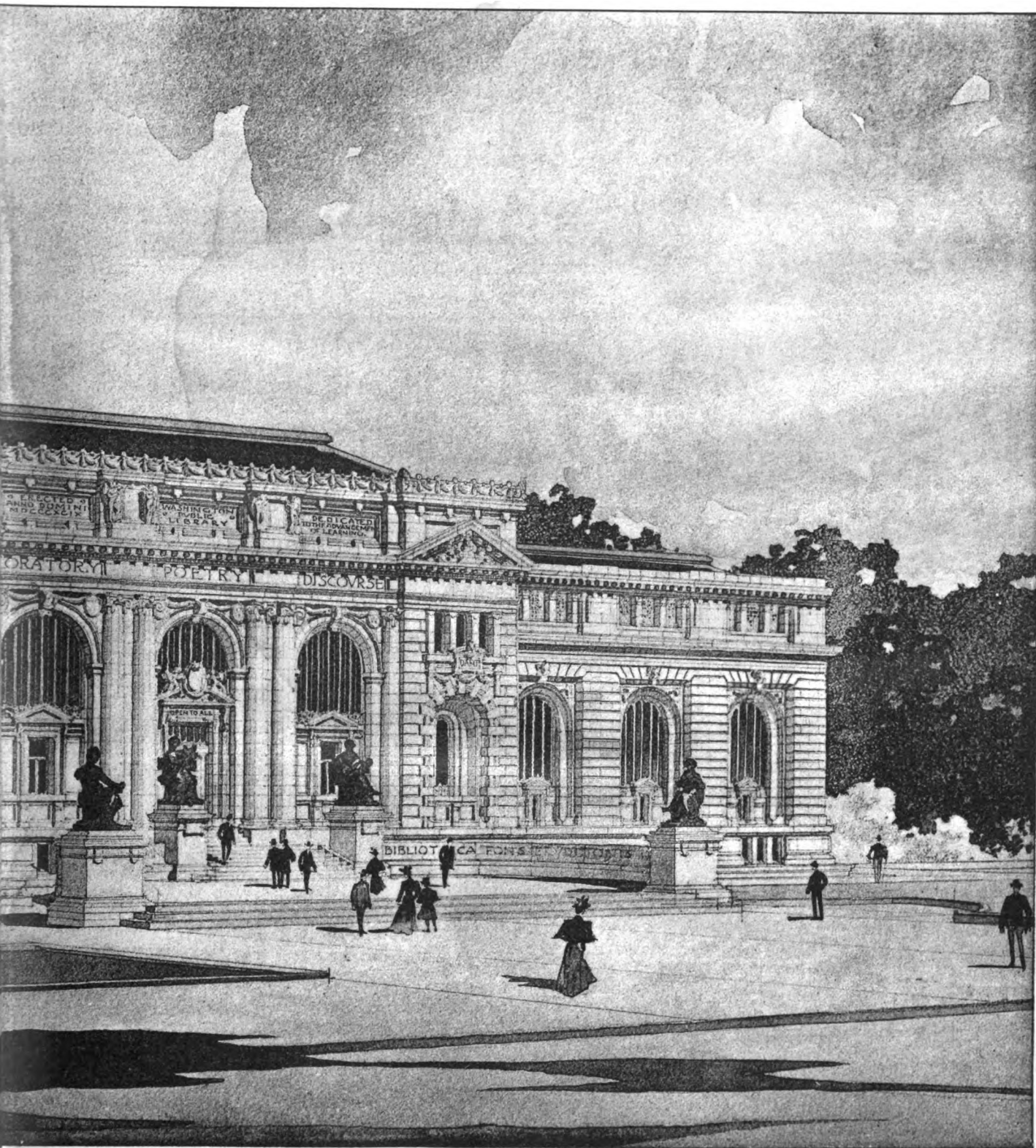


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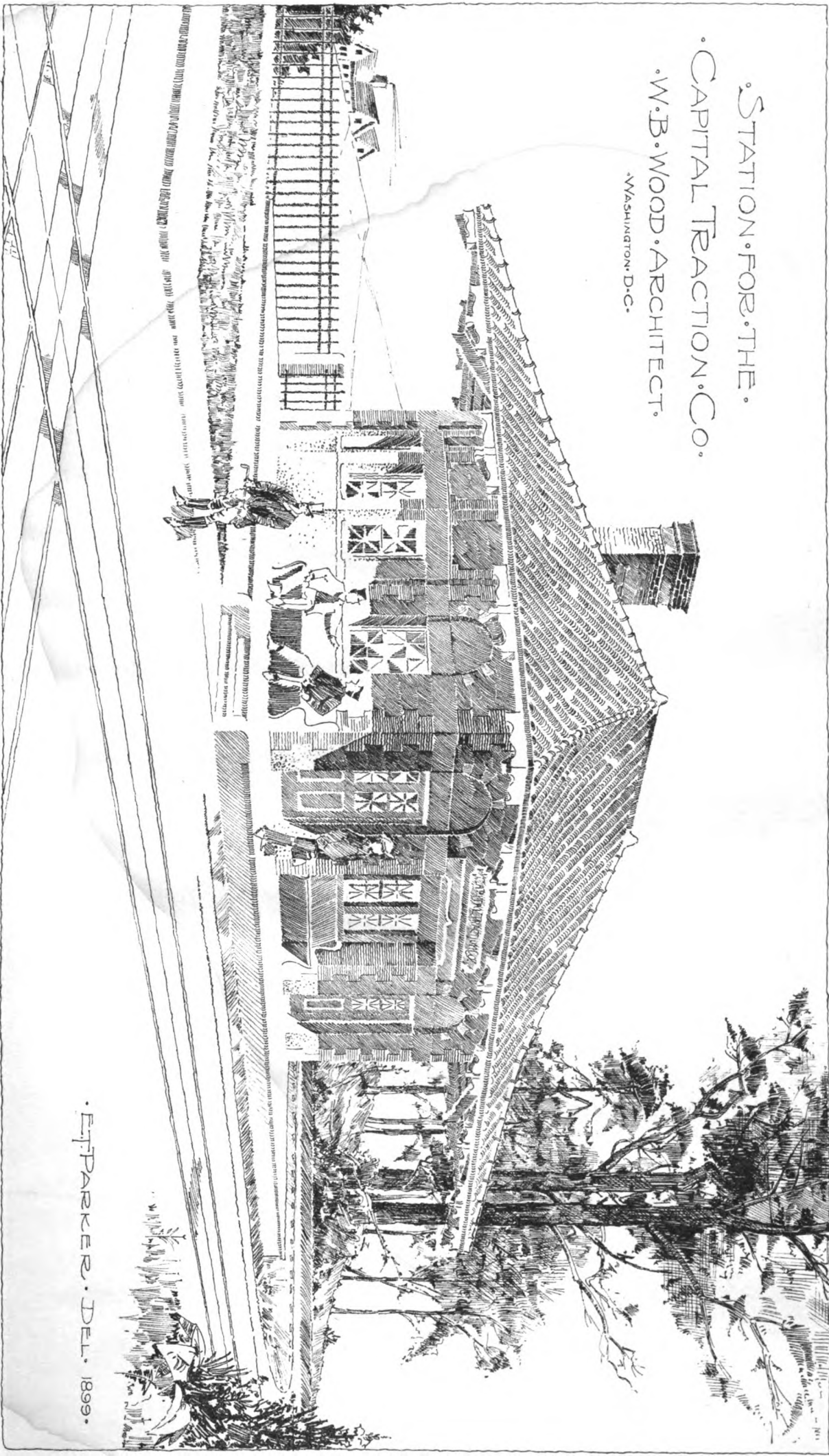


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E. J. PARKER. DEL. 1899.

men, whose presence has helped materially to raise the character of the school.

The only other distinctive feature of the school is that it dispenses with the whole apparatus of mentions, medals, prizes and personal honors. In this particular it is as far as possible removed from the precedents of the School of Fine-Arts, while sedulously adopting or adapting what seems to be best in the French methods of teaching and study. Trusting, instead, to the intrinsic interest of the subject and to the serious purpose of the students is held to be more germane to American methods and to the character and spirit of our institutions, and to be more likely than the competitive rivalries of the French school to create and maintain the atmosphere and personal tone that is most to be desired.

At the University of Pennsylvania no changes are to be noted. Professor Laird was taken seriously ill toward the opening of the academic year, and, though he is happily recovering, it will be some time before he is able to return to his duties. Meanwhile, his work has been so arranged among the other instructors that his absence causes no interruption in the work of the department.

At Harvard University the Department of Architecture has important developments to report. The curriculum has been enriched by the addition of a course on "The Theory of Design," by Dr. Denman W. Ross, a course which has especial reference to decorative design. The corporation of Harvard College has established from the fund left by the late Edward Austin, the Austin Travelling Fellowship in Architecture, of the annual value of \$1,000, open to those who have taken the degree of Bachelor of Science in Architecture at Harvard with distinction. This is the seventh travelling-scholarship in architecture that has, therefore, been established in the United States. But of far greater importance for the department is the gift announced by President Eliot at the last Commencement of the sum of \$200,000 for the Department of Architecture by a donor whose name is as yet withheld. Of this sum, half is to be used for a building for the exclusive use of the department, and the other half as an endowment for its maintenance. The new building is being designed by Mr. McKim, and it is expected will be commenced next spring. It will stand in close proximity to the Fogg Museum of Fine-Arts and to Sever Hall, where some of the work of the Department of Fine-Arts is also carried on. All the fine-arts activities of the University will then be concentrated.

Apart from the advantage to the department of a large building, exclusively its own, and completely adapted to its work, the change of location to a point within the college-yard is of great importance, as it brings the department close to the Fogg Museum of Fine-Arts, with its collection of casts, drawings, engravings and nearly thirty thousand photographs, illustrating the history of fine-arts, a large proportion of them on architectural subjects, and close also to the University Library, with its large and growing collection of books on architecture and the fine-arts; which are most valuable adjuncts to the library and collection of casts which the department itself possesses. This close proximity to the centre of the life of the college will, it is hoped, enable the department still further to take advantage of the peculiar advantages of its situation.

The endeavor of the Department of Architecture at Harvard has been from the first to encourage the development on the scholarly side of our profession. The courses of Professor Morse and Mr. Edward Robinson in the history of Fine-Arts, and of Professors White and Greenough in Classical Archaeology, form important parts of our curriculum, while the Department lays the greatest stress on the study of architecture as a fine-art, and devotes the largest portion of the time at its disposal to drawing and design. We have naturally an increasing number of college graduates in our course, and the hope is that the Department will be more and more regarded as a post-graduate school. An experiment previously tentatively tried is now in full and successful operation: that of obtaining the assistance of the committee of architecture appointed by the Board of Overseers in the advanced instruction in the department.

The plan pursued is for each member of the Committee in turn to have charge of one of the advanced problems with the aid of the instructors in the Department. This brings the members of the Visiting Committee into direct contact with the students, and gives them a familiarity with the work of the school which is impossible under the plan, sometimes pursued, of having outside architects criticise the students' work after it is done.

The present members of the Committee are Mr. R. S. Peabody, Mr. Edmund M. Wheelwright, Mr. A. W. Longfellow, Jr., Mr. R. Clipston Sturgis.

The plan has worked very successfully and promises to give to the department the advantage of the aid of prominent practitioners in the advanced work of the school. In other respects the new year opens most promisingly for the department.

In addition to the schools the architectural clubs throughout the country are important factors in our architectural education. Now that these clubs have concentrated their forces and have formed a national organization, "The Architectural League of America," the way seems open for the American Institute of Architects to come into some direct relationship to them through the national body. "The American Institute of Architects" should embrace all the interests which affect the profession. Just as the older men in the profession do not perform their whole professional duty unless they establish helpful relations with the younger members, and especially with the draughtsmen in their own offices, so the Institute

will fail to completely exercise its proper function unless it also reaches the younger men. It is probable that this can best be done through the recently established "Architectural League of America," and it seems not impossible that the League might hold to the Institute some such friendly official relation as the Architectural Association in England holds to the Royal Institute of British Architects. Your Committee therefore suggests that the Board of Directors of the Institute be instructed to approach the officials of the Architectural League of America and invite them to appoint members of a joint committee to consider and formulate some scheme of mutually helpful coöperation.

In their last report, your Committee referred to the fact that the architectural schools are now turning out graduates at the rate of over seventy a year and that the number of graduates in the country far exceeds the number of members now in this Institute. They therefore recommend that the Institute consider the advisability of requiring that candidates for admission to its ranks shall be either graduates of a recognized school of architecture, or shall pass an examination, to be held by the Institute itself, as a test of fitness. Your Committee desires to renew this recommendation. All the members of the Committee feel that the time has come when this question should receive careful consideration, while a large majority join in urging that steps be immediately taken looking to this end. In England the requirement of a graded series of examinations for admission to the Royal Institute of British Architects has worked well and has not had the evil results its opponents feared.

After an interregnum, during which older practitioners could still be admitted without examination, the changed conditions have now for some years been in operation, and an architect can now become a Fellow only by going through the stages of probationer, candidate and associate. Moreover, in one respect, the conditions of the profession in this country are more favorable to such a step than those existing in England at the time when a somewhat similar step was taken there. The existence here of a number of thoroughly organized and equipped professional schools makes it easy to require that candidates shall be graduates of these schools, and does not involve the establishment of the elaborate machinery which was required in England. But your Committee feel it to be important, if this change is made, that a way shall be open for the admission to the Institute of those *not* graduates of the schools, by providing that they may pass a special examination to prove that their professional knowledge reaches the required standard. It is further quite clear that such a change should not be suddenly put into operation, but that a date should be set, several years ahead, after which the new requirements of admission would become entirely operative; and meanwhile, the new method could be immediately tried and both methods of admission could be simultaneously used. The younger and less known men could be admitted to associateship on examination, or on the strength of their diplomas from the architectural schools, after the requisite number of years spent in practice, while the older men could be admitted on the strength of their records. This plan would have the advantage (during the proposed interregnum) of allowing the Board of Directors to exercise its discretion, and to insist, in any doubtful case, upon the candidate taking the examination or producing the diploma of a recognized school. So far from tending to reduce the members of the Institute, it is believed that such a step would tend to increase its membership, as well as to strengthen its prestige. It is obvious that at present the Institute is very far from numbering in its ranks, or even in the ranks of its Chapters, all American architects of training and of good professional standing. If membership in the Institute becomes the sign of attainment of a definite standard, it will be recognized as an honor to be numbered in its ranks. It will seem worth while to join the Institute to many who have hitherto not cared to do so, and it will not be long before all those able to attain this honor will seek it.

It will be observed that this report contains two definite recommendations:—

First.—That a conference be invited with the Architectural League of America, looking, not to union, but to some form of official and friendly coöperation; and

Second.—That the Institute immediately consider the advisability of taking steps to so change its by-laws as to require, after a specified date, say after January 1, 1905, graduation from some recognized architectural school, or the passage of examinations to be held by the Institute, as a prerequisite of membership, and that meanwhile both methods of admission be simultaneously in operation, it resting in the discretion of the Board of Directors to require in any given case that the candidate enter by the new method.

Respectfully submitted for the Committee,
H. LANGFORD WARREN, *Chairman.*

THE NEW YORK SOLDIERS' MONUMENT.—The Soldiers' and Sailors' Monument Commission have again changed the site of the proposed monument. The site this time is changed from Mount Tom, at Eighty-third Street and Riverside Drive, to a place in the Drive between Eighty-ninth and Ninetieth Streets. The objections to the Mount Tom site were that two apartment-houses were erected there recently, which would spoil the appearance of the monument. The new site was referred to the Municipal Art Commission for approval. The Municipal Assembly has authorized the spending of \$250,000 on the monument. — *Exchange.*

MARBLE.¹ — I.

IN architecture the word marble conveys the idea of a stone of more importance than an ordinary building-material. It is a stone always possessed of some special beauty, either in texture, color, or both, and of sufficient hardness to take a polish. The varieties are almost infinite, and, numerous as they are, it is rare that any two quarries are precisely the same; there is always an individuality of some sort or another.

We have marbles of one uniform color, as white, black, gray, red, yellow, green, and so on; but in all cases, even in whites and blacks, there are differences. The whites of Carrara, Italy, vary from those of Greece, Spain and America. The blacks of Belgium are not the same as those of England and Ireland. The serpentines of The Lizards, Cornwall, vary from those of Banff, in Scotland and Anglesea, and further vary from those of the Continent and America. These variations are not to be wondered at when for a moment we study their origin and the different changes they have gone through as part of the earth's crust. Their ages are equally wide apart, some being, comparatively speaking, recent, while others are old, and some very old. The white crystalline marbles are now conclusively proved to be nothing more than ordinary sedimentary limestone rocks, like our chalk-cliffs, or carboniferous rocks, which have gone through a process of cooking or baking under great pressure, while being hermetically sealed by overlaying rocks, which have kept in the gases, causing the limestone rock to crystallize and alter its nature to that extent that rarely any of the fossils are now discernible; in short, a new rock is produced.

There are other whites that have been produced by hot springs carrying in solution a large quantity of lime and silica, which deposits directly the carbonic-acid gas is liberated in the atmosphere, often producing a rock of the purest whiteness, or colored by any metal that the hot water may pass through.

Black marble is a sedimentary limestone colored by carbon, which color is immediately destroyed by heat, producing the whitest of lime oxide.

We get black marbles with white veins, these white veins are usually younger than the rock itself, being infillings of the cracks produced by different causes in the history of the rock. These remarks about black rocks apply equally to red and yellow ones.

Another class of marble, the Breccias, have gone through all sorts of Nature's changes and disturbances; they are rocks that have been broken into irregular fragments and been cemented together again by Nature, and after that in some cases have gone through a baking process and the like.

Nearly all our green marbles are earlier rocks that have been altered, and in some instances been broken up and recemented, like Verde Antico. The greens are nearly all magnesia, while the whites in the same mass are lime; occasionally we get both white and green magnesia in the same mass.

This slight geological introduction will prove to you that, as marbles are produced under such varying conditions, the quality must be equally various both in hardness and durability.

Again, some marbles, like the Purbeck, are not much more than tremendously compressed mud and fossils; others are only baked compressed clays.

When used in damp situations these often go back to their original elements, and it further happens that a marble that behaves fairly well in Italy frequently will not stand at all with us.

And there are marbles that, like building-stones, have to be placed on their natural bed.

Most marbles will stand in isolated shafts or engaged pilasters, but experience shows us that only a very limited number used as slabs for wall-linings can resist the moisture of a newly-built wall. The destructive power of this moisture, be it hydraulic or chemical, is such that it very shortly destroys the face of many marbles; all those of a slaty or sedimentary nature face-bedded go directly — for instance, the Swiss Cipollino — but if cut across the bed, they stand fairly well. Then again, certain marbles, like Purbeck, Emperor's Red and Verona, which consist chiefly of flattish fossil-shells, these, when face-bedded on damp walls, become pitted with small holes, while across the bed they stand all right. Nearly all this class of fossil-marble is only obtainable in thin beds, so a large slab has to be face-bedded.

These same remarks apply to certain red marbles found near Carrara, which are red clays compressed and baked by the same heat that has produced the crystalline whites.

When the Greeks used marble in architecture it was always treated as an ordinary building-stone; no attempt was made to save material, everything was massive, and the blocks were ground or rubbed together until the whole structure was next to homogeneous, without the aid of mortar or cement.

Their columns, as you are aware, were built with thick drums; these blocks were worked roughly in the quarries, with projecting bosses on the sides, to which most probably were attached some wooden arms to enable the blocks to be revolved forwards and backwards on the wooden centres until the two faces came together with an almost invisible joint. When built the whole column mass was skilfully masoned into a pillar with all the Greek subtlety of diminishing entasis and delicate flutings.

The durability of this work, had it not been for earthquakes and the ravages of man, would have been perfect now.

Those who have not seen the Acropolis of Athens can scarcely realize the beauty of this immense marble pile. The sublimity of color is in harmony with the subtlety of form. It is not the cold blue-white marble of Italy, so common with us, but a translucent warm ivory tint, becoming often ochre-yellow; this deep color, which is only surface, is usually attributed to great age, but this is not correct, as is proved by the coloring of recent fractures on the Parthenon and by modern buildings in Athens, a good example of which is a high slab plinth round the Royal Palace. This marble is already nearly as yellow as the Parthenon. The marble contains minute crystals of iron pyrites, the decomposition of which yellow-ochre colors the marble.

In the Greek temples of Delphi, Sicily and Pompeii the common-worked stone was plastered over with a marble-like stucco, which is thought to be marble-dust with lime and albumen. I think now from what I saw recently in Greece that it may be white crystalline marble not quite burnt through into lime; this I saw being finely crushed with rollers by horse-power for plaster-work.

There is no doubt the Greek methods of quarrying became the Roman, but it is impossible to imagine that the Greek could have quarried better than what we find now remaining of Roman work, and this not only in the white quarries of Pentelicus, but in the various colored quarries found in many of the Greek islands. These old Roman workings you can always tell at a glance by the carefully-tooled upright face of the rock. I saw lately in an old quarry on the island of Scyros an axed face some sixty feet high.

Although the Romans took over all the Greek white quarries they were not content with this, but opened quarries of choice color wherever they could be found, and these they worked for monoliths to embellish their buildings in Rome and colonial cities.

The Roman method of quarrying monoliths for shafts and architraves was by working them *in situ* engaged to the parent rock, either horizontal or vertical, according to the bedding and the solidity of rock. In the Verde Antico quarries the upright large semicircular hollows remain, showing where the great Justinian columns for St. Sophia, Constantinople, were got.

Sarcophagi were quarried by being worked all round engaged to the rock at the bottom; they were then wedged off.

In the old Carystian quarries of Cipollino, there are many examples of both finished and unfinished work *in situ*. In one quarry, some two thousand feet up the very steep mountain side of "Oche," on a shelving mass of rock overhanging an awful precipice, are eight columns, 39 feet long, beautifully wrought, with entasis and top and bottom members quite finished and ready to be fixed, probably in the portico of a temple like that of Antonius and Faustina in the Forum of Rome; one of them is only a few feet off the sloping edge of the precipice. How they contemplated getting them away is and must, I fear, ever remain a mystery. In addition to these finished columns there are several of similar size, partially wrought, engaged to the horizontal face of the rock; other immense masses were stepped and partly worked for various purposes.

Roughly speaking, perhaps three-fourths of the white marble used in the world at the present day comes from the Carrara district of Italy. The marble mountains extend some twelve miles; they consist of mountain peaks going up to an altitude of 6,000 feet. The sides of these mountains are scored with valleys and ravines which have only three outlets — Carrara, Massa and Seravezza. On the sides of these valleys are the different quarries, of which there are some six hundred, "producing annually about two hundred thousand tons." The water coming from these ravines turns innumerable sawing-mills, which slab annually some sixty thousand tons of marble. The towns are full of workshops and studios. The marble businesses support in the district some ten thousand people. Any young man who likes mountain scenery, with picturesque sketching and architecture, cannot find a hunting-ground anywhere to surpass this. He will find beautiful Byzantine, Mediæval and Renaissance work in marble that cannot be surpassed or rarely equalled in Italy. It was the land of the Medici, the playground of Michel Angelo and Donatello.

I believe a young man could spend a month, pay his fare from London and back, hotel accommodation, including food and Chianti wine *ad libitum*, for less than it would cost at an English seaside town. He would also pick up a little Italian. Nearly all the best statuary of the world is quarried at Mont Altissimo, Seravezza, near Carrara. This is the famous H-marked statuary of commerce, H being for Heuraux, the proprietor.

In Italy there are also old white quarries near the coast, not far from Grossetta, between Pisa and Rome. The cathedral of Milan was built from quarries above Baveno.

Spain has several extensive deposits of white marble. The best is the one the Moors used at the Alhambra, the quarries of which I visited some years ago; they are at Macael, between Lorca and Baza. There is good quality white marble in Trazos Montes, Portugal, where an enterprising company ten years ago quarried 20,000 ft. worth without any prospect of getting the blocks away, and there they are now.

France has white marbles at St. Beals, but there is little demand for them, although there is a considerable duty on foreign produce in France.

Norway has extensive deposits, but very little of it is good. Some

¹A paper by Mr. William Brindley, F. R. G. S., read before the Architectural Association, November 10, 1899.

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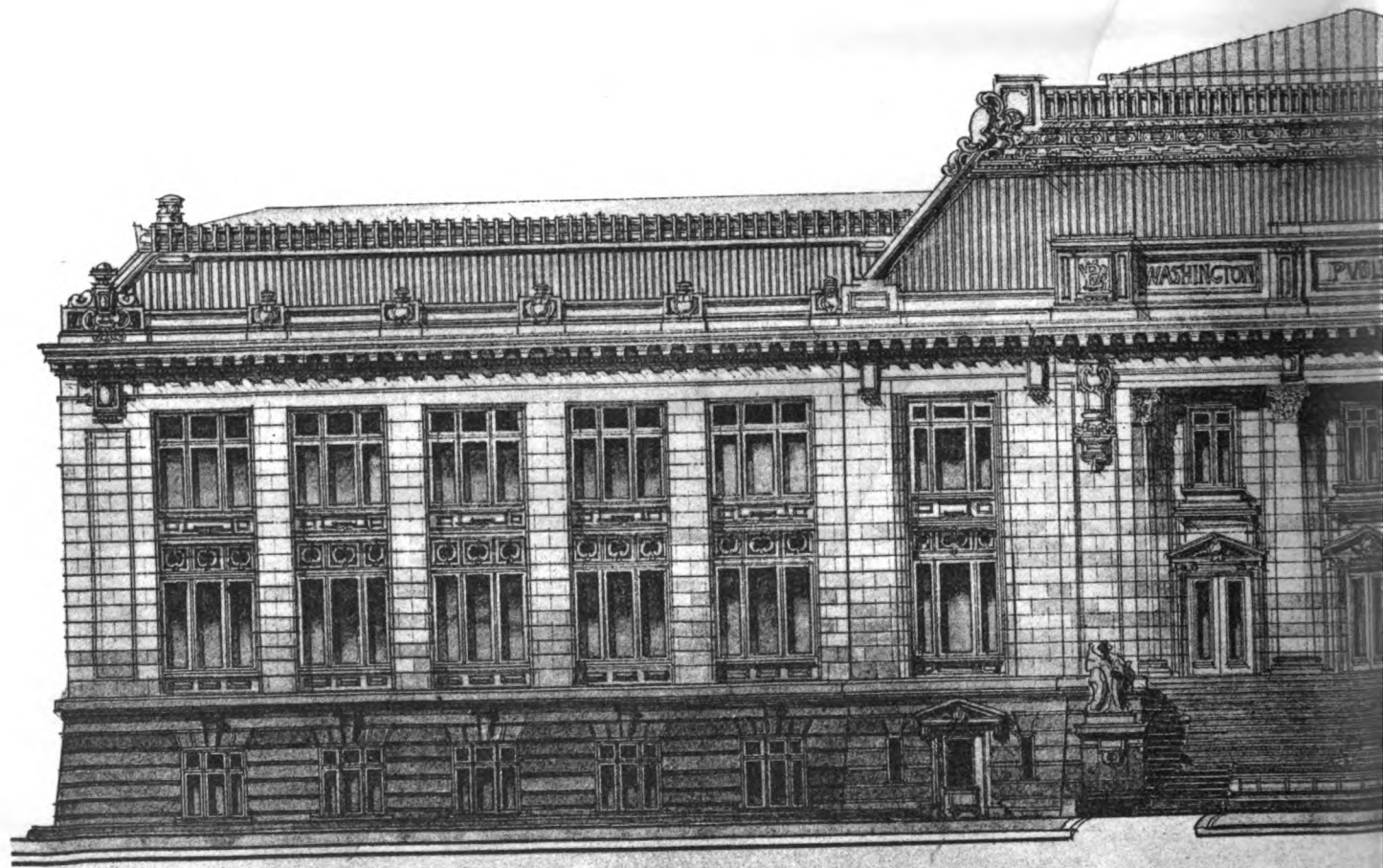
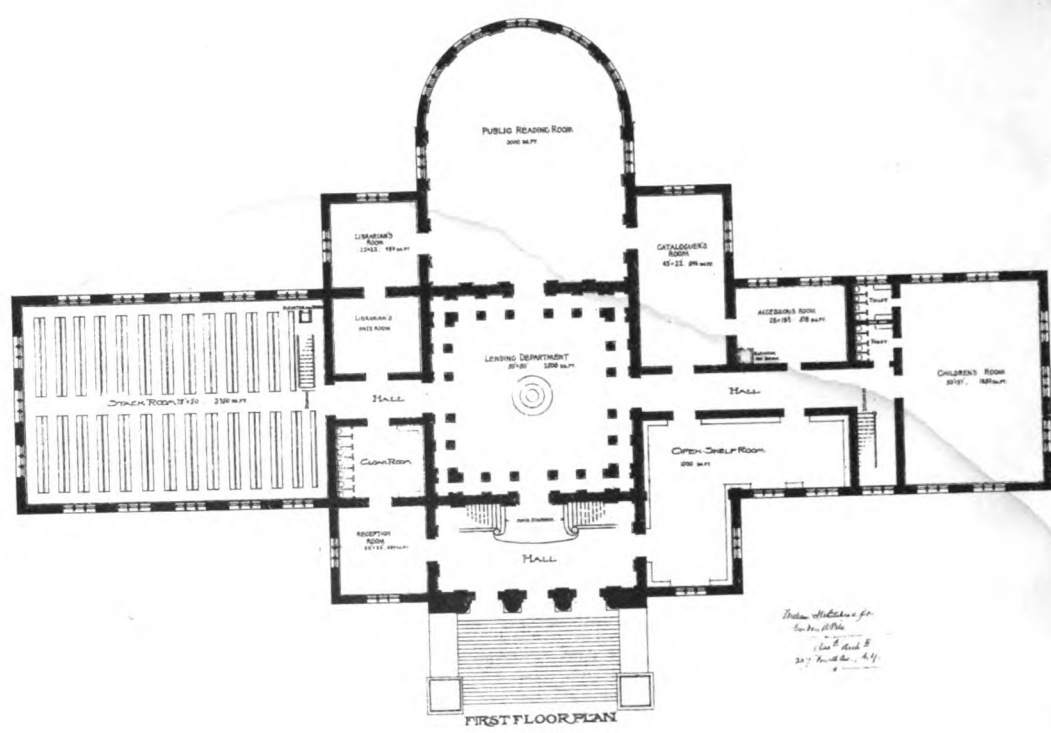
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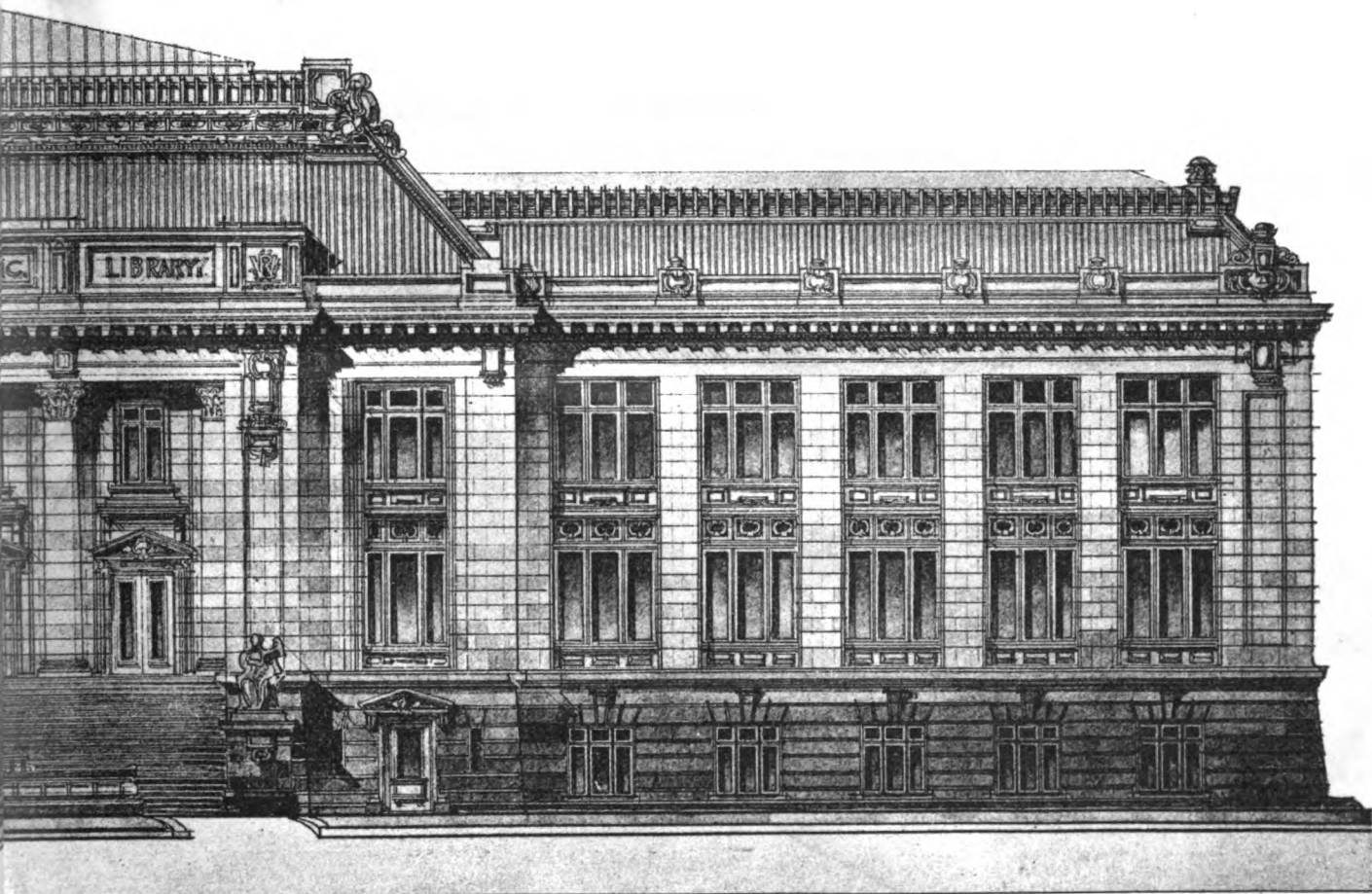
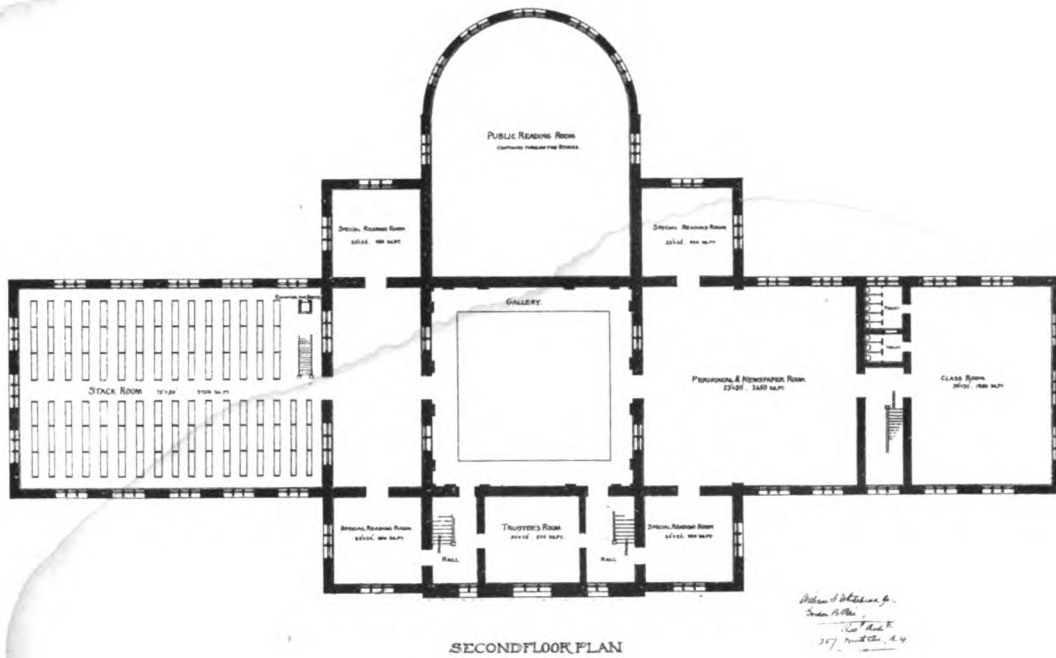
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was used for ashlar at the Junior Constitutional Club; it seems to be standing very well. The finest quality is at Velfjord; it is only about one hundred feet off very deep water for shipping. There is farther north a crystalline white marble which is a dolomite.

The late war of the Greeks and Turks would seem to have enriched the Athenians, for they are pulling down their old buildings and erecting lofty Pentelic marble ones in their places. They are full of architectural detail, which is very well done. The marble is chiefly obtained from the south or Athens side of the mountain, near the ancient workings.

A company is now working the north or Marathon side. I have examined the different quarries very carefully, and am of opinion that they are the same beds as the south side, but the famous old cave statuary is not yet found. They are extracting large blocks, some of which are being used in the safety repairs of the Parthenon. We are working blocks of this marble which those interested can see. It is considerably harder and more costly to work than Carrara.

In marble quarrying considerable skill and judgment is required; the mass of rock is rarely solid enough to be stepped down as in ordinary stone quarries, and blasting cannot be employed, except for clearing away masses of inferior material.

The coloring and marking of such marbles as Pavonazzetto does not extend through the face of the rock, but is a veined mass or bed in the statuary formation, the same quarry producing first and second quality statuary and first and second Pavonazzetto. The system is, when a choice solid mass is found, to work away from the top and sides all inferior rock round the good mass. It is then sawn or wedged into blocks as large as can be obtained free of shakes. A few months ago I saw in the quarry of Crestola a solid mass so cleared, of about one hundred tons, worth over one thousand pounds sterling.

The removal of the blocks when quarried is done in a very skilful manner by a specially-trained group of workmen, and it is surprising with what ease and rapidity they will remove blocks, often twenty-five tons weight, from the quarries and down a steep declivity to the loading-place, where they are taken away on a specially-built truck drawn by sometimes as many as thirty-six oxen.

There are no lifting-cranes in the quarries — only crowbar levers are used. The men get round the block, each with his lever, and they all lift at the same instant, the signal being given by a lively sing-song.

The blocks are lowered down the mountain-side by means of ropes passed round posts. The block being on a sort of sleigh is slid over hardwood sleepers greased with a bar of soap. A man rides on the block, and passes the sleepers given him from behind to front.

The old Rhondona and Breche Violetta are usually underground quarries, and extracted by the aid of long saws, a channel being cut first over the block to free it from the roof and a chamber at each end for the men to saw in. By this means they sometimes get a block of sufficient size to produce two monolith columns 14 feet long. The red Levanto Breccia and Genoa green is also sawn out of the rock.

The re-found Verde Antico of Thessaly, of which there are thirty-six columns in front of St. Mark's, Venice, is a hard Breccia of greens, greys and whites. The quarrying of this is by the aid of the wire saw, which is a three-strand endless steel cord of over two thousand feet in length running over descending pulleys, and being fed with sand and water: this cuts the marble. This method of extraction is the latest and most improved, as it in no way injures the marble.

It was from the quarries of Synada, in Asia Minor, that the Romans got their beautiful red purple-veined Pavonazzetto, and all other sorts of this marble; these quarries also produced beautiful pure-white statuary, and a rare variety of delicate flesh-tint. There is on the walls a series of photos of these quarries taken by Baron Schwiter; also specimens are shown. The antique marbles, Numidian Yellow, Laconian Red, Thessalian Green, Africano Breccia, Carystian Cipollino, Egyptian Porphyry, Laconian Serpentine, Breche Universal — these are unique, and have no modern representatives.

Unquestionably the best yellow marble known is the Giallo Antico of the Romans. The columns of the Arch of Constantine, which were Trajans, and half those of the Parthenon, are of this marble. It varies from deep ochre-yellow to pale and a delicate rose-color; its markings are red and blue purples, the grain is crystalline, and it is translucent. This is the marble found in the encrustation of the palaces of the Caesars, the Baths of Caracalla — in short, it was the only yellow used in old Rome.

The quarries, which are very extensive, are in Tunis, near the frontier of Algeria; they were extensively worked about fifteen years ago by a Belgian company, which went to grief owing to having an engineer as chief of the quarries instead of a practical quarryman. The next in quality is the yellow of Sienna, which is familiar to all. The best quality of this yellow is now not obtainable. Beautiful panels are often seen in old Adam's chimney-pieces. The South of France, Spain, and North Italy produce about a dozen yellow varieties, but they are all inferior in quality to the two first named.

The colored marble most used by the Romans was the Carystian (Cipollino) from the island of Euboea; there was more of this used in Rome than all the other colors added together. The first reason may have been owing to the immense size monoliths could be got [as

supports for their porticos and basilicas, but great quantities were also used for decoration; it opens out into chevron pattern more beautifully than any other marble.

[To be continued.]

BOOKS AND PAPERS

IT is perhaps fortunate for those overcome by the itch of book-making that there are certain liberally endowed societies and libraries which can be counted on to buy enough of the books, when ultimately put on the market, to minimize the loss that, seemingly, must inevitably fall on the unwise publisher, or, as is more likely, upon the overconfident and unworldly author. If it were not for this possibility, it is more than likely there would be fewer books like this which describes Glasgow Cathedral in a quarto volume of 450 pages and weighing nearly nine pounds.

Clerics, antiquaries and archæologists very likely find interest and value in the long extracts in high Latin and low Latin, low Scotch and Middle English, unintelligible legal forms and curious spellings, that it seems to be necessary to scatter without limit through such works as this, if the author would in the eyes of those who share his tastes be held worthy of fellowship with them. But to the lay reader such minutiae, such proof of erudition and painfully conscientious research, do but increase the sense of weariness with which he seeks for the few kernels of information which can interest him.

The scheme of this particular work¹ is very complete, as it begins with the founding of Glasgow and ends with a reasonably good index of the book, and in between is given the history of the patron saint of the church, St. Kentigern, the history of the Church Society under Catholic and Protestant administrations, the lives of bishops, priests and clergy, an account of the church fabric and the changes that have befallen it, and a shorter one of the bishop's castle, and then follow chapters on the stained-glass, the monuments and inscriptions and on the prebends and prebendary manses.

While the book, in all that concerns the art of book-making, is a handsome one, its power of attraction for architects may be gauged by the fact that about half its several chapters — for it is the result not of individual but of associated effort — are written by reverend gentlemen, and though the literature of architecture owes much to the patient labors of intelligent clergymen, it is nevertheless true that they are prone to give more attention to the archæological history of their subject than to its structural or artistic qualities.

Glasgow Cathedral is, like all the remains of Scotch architecture, less well known than the results of contemporary effort either in England or on the Continent, and it is rather strange that this should be so, since Scotch work has a very distinct quality of its own and Scotch stone-masons were masters of their craft, and so, while Scotch work is often cold and lacks interest through absence of much sculptural ornament, it has a purity of line and a common-sense of construction that are quite its own. The two features that distinguish Glasgow Cathedral amongst its kind are the western towers — perhaps we should use the past tense, since the towers disappeared half a century ago — and the fact that, like S. Francesco at Assisi, it has an upper and a lower church, a distinction that it shares with the Church of St. Gregory at Spoleto and the church at Rheindorf, on the east bank of the Rhine. This lower church, though it is sometimes called a crypt, is not a crypt, since its floor is above the level of the ground and in all the old documents is spoken of as "*ecclesia inferior*."

This lower church occupies all the space below this choir of the upper church and from its northeast corner opens the square two-story chapter-house, the upper story of which is used as the sacristy. Balancing this structure, as it were, at the southwest angle of the lower church is Archbishop Blacader's Crypt, so-called, though it, too, is wholly above ground. This crypt has all the air of being intended to be the lower story of the south transept, but no upper story was ever built, and so the upper church has no transepts, neither south nor north, although the bays of the aisles to the north and south of the crossing are in the plan of the upper church styled "transepts." One of these transepts, however, the northern one, has no other function than to accommodate the stairs leading to the lower church.

The effect of this arrangement on the upper church is to create an exceedingly impressive interior, as its length is 283 feet, while its width is 61 feet 9 inches. One other feature of the church is unusual, and that is that this is one of the few churches which have double aisles across the east end, both in the upper and the lower divisions. As the several bays of the outer aisle are each used as a separate chapel — in the lower church being separated from one another by a solid wall — it results that the inner aisle is the usual

¹ "The Book of Glasgow Cathedral." A History and Description edited by George Eyre-Todd, with special chapters written by Archbishop Eyre, D.D.; J. F. S. Gordon, D.D.; P. M'Adam-Muir, D.D.; John Honeyman, R.S.A.; James Paton, F.L.S.; A. H. Millar, F.S.A., Scot., and Stephen Adam. Profusely illustrated with one hundred and eighteen views, drawings, etc., including beautiful full-page photogravures on Japanese vellum by T. & R. Annan & Sons; and pictures by David Small, Herbert Ralston, J. A. Duncan and others. The architectural beauties reproduced by photographic process being in many instances unique; with facsimiles of Episcopal seals, writings, etc., not before brought together. The edition for sale will be limited to 1,000 copies. Price, 42s. net. Glasgow: 1898.

channel of communication. The most notable feature of the structure is the vaulting of the lower church, which is rich and complicated to a degree, the fact being that, as Sir Gilbert Scott once pointed out, the observer cannot place himself in a position from which he can perceive two compartments covered by vaults of the same arrangement. But when the vaulting is seen drawn out on plan, it is apparent that it was laid out with extreme ingenuity and that the arrangement is furthermore absolutely symmetrical.

The other feature once of interest was the two western towers, a feature which this cathedral shared only with the buildings at Elgin, Aberdeen and Brechin, all other Scottish cathedrals wanting them, as this does now. These towers were further singular in that they were built in projection from the west front, so that the west gable wall, with its doorways, stood recessed between them, their east walls forming parts of the western wall of the cathedral. The northwest tower, 32 feet square, rose to a height of 118 feet and was then crowned by a spire, which added 26 feet to its height. The southwest tower was slightly larger on plan, but rose square to a height of 54 feet, and was then covered by gables, which added 16 feet to its height. Although these towers were built only after, but immediately after, the completion of the thirteenth century nave, they were venerable with years, and must have added to the dignity of the structure. At all events, they deserved a better fate than to be pulled down some forty years ago — although in a state of perfect preservation — by order of Her Majesty's First Commissioner of Works, during a "restoration" conducted under the orders of that intelligent gentleman!



DETROIT ARCHITECTURAL CLUB.

THE Detroit Architectural Sketch-Club by amendment will be known hereafter as the Detroit Architectural Club.

The officers for the season of 1899-1900 are Geo. H. Ropes, President; H. A. O'Dell, Vice-President; J. A. Gillard, Secretary; A. Blumberg, Treasurer; J. W. Case, D. R. Wells and C. F. J. Barnes.

Preliminaries for the coming Club Exhibition are being directed by Mr. F. S. Swales and his committee.

The attendance and interest in the Club is increasing.

J. A. GILLARD, Secretary.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

ENTRANCE FRONT: "WYNDHURST," HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Gelatin Print, issued with the International and Imperial Editions only.]

STATION FOR THE CENTRAL TRACTION CO., WASHINGTON, D. C. MR. W. B. WOOD, ARCHITECT, WASHINGTON, D. C.

CHAIRS DESIGNED BY MR. P. G. GULBRANSON, ARCHITECT, BOSTON, MASS.

ACCEPTED DESIGN FOR THE WASHINGTON PUBLIC LIBRARY, WASHINGTON, D. C. MESSRS. ACKERMAN & ROSS, ARCHITECTS, NEW YORK, N. Y.

A COMPETITIVE DESIGN FOR THE WASHINGTON PUBLIC LIBRARY WASHINGTON, D. C. MESSRS. W. S. WHITEHEAD, JR., AND GORDON B. PETERS, ASSOCIATED ARCHITECTS, NEW YORK, N. Y.,

[The following named illustration may be found by reference to our advertising pages.]

GLASGOW CATHEDRAL. DRAWINGS BY MESSRS. HERBERT RAILTON AND D. SMALL.

THIS plate is copied from "The Book of Glasgow Cathedral." See book-note above.

[Additional illustrations in the International Edition.]

THE PORTE COCHÈRE: "WYNDHURST," HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Gelatin Print.]

THE NEUSTÄDTER THOR, TANGERMÜNDE, PRUSSIAN SAXONY.

[Gelatin Print.]

THIS old Saxon town, which at one time was the favorite seat of Emperor Charles IV (1347-'78), had many gates, of which but few are preserved. The finest, as well as largest, is the Neustädter Thor, guarding the west approach to the town. It consisted originally of an outer gateway, now almost entirely gone, a stone-arch bridge spanning the moat, and an inner gateway, the latter forming the subject of our plate, as seen from the outside, with the west tower of St. Nicholas's Church rising directly back of it. The arched gateway is flanked on both sides by towers, a larger round one and a smaller one of trapezoidal plan. The platform over the arch was at one time topped with battlements of brick, but was later closed-in and covered with a tiled roof. A frieze of square terra-cotta plates, bearing grotesques, runs along above the archway and is continued around the big tower. The wall-faces of the latter are enlivened by rows of glazed brick of a dark-green, arranged in spiral and zig-zag lines. Unfortunately, the upper ring of battlements, with four characteristic dormer-like features, is badly ruined. A circular defensive gallery (*Wehrgang*), about midway up the tower, which rested on corbels, has crumbled away, leaving but few fragments of its original appearance. The difference in the styles of the two towers is accounted for by the fact that the building took the place of an older gate, parts of which were fused into the new structure. The small tower dates from the early part of the fourteenth century. Above the friezes of pointed arcades the original battlements may still be recognized by the inequality of the brickwork. About the beginning of the fifteenth century, this tower was carried up higher, by filling up the gaps between the battlements and running up a new tier of battlements above. At the same time, too, the present archway and big round tower were erected.

THE LIBRARY: CAVERSHAM PARK, ENGLAND.

CARLOS PLACE, GROSVENOR SQUARE, LONDON, ENG. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS.



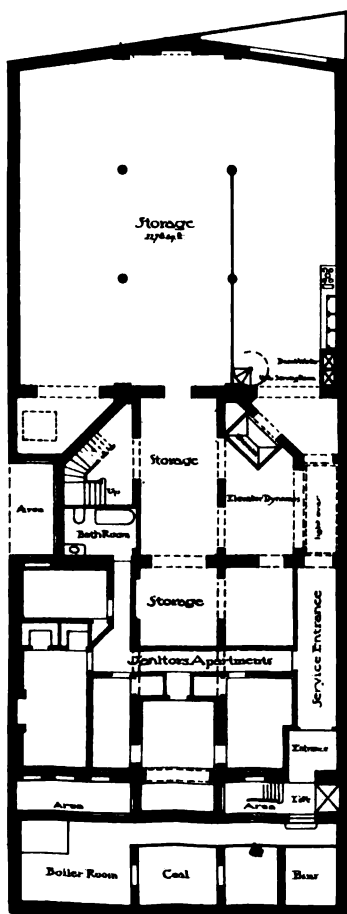
WATER-METERS AFFECTED BY ELECTROLYSIS. — It has been discovered in St. Paul that electric ground-connections, made by attaching wires to water-pipes, not only ruin the pipes by electrolysis, but seriously interfere with the operation of the water-meters. In one case a meter through which a large quantity of water was being discharged failed to register. This was an extreme case and easily detected, but what the effect has been upon the indicators in cases where the current is not so strong the officers of the Water Board have no means to determine. To protect themselves, however, they have ordered the removal of all electric wires from the water-pipes. It is a measure of safety, too, for the employés of the board, many of whom have been severely shocked while at work upon the pipes and meters. — N. Y. Evening Post.

MODERN CHAIN-ARMOR. — Among the many industries connected with the iron and steel trades, there is one survival from former times in England, which is of great interest. This is the mail chain-armor manufacture in Walsall. J. W. Hawkins & Co., Limited, who contract with the Government for the supply of spurs, bits, stirrups, harness, buckles, chains, etc., also supply mail chain jackets and other steel productions for use in India, Central and South America and other countries. These jackets of mail, which weigh from fifteen to eighteen pounds, are worn by army officers, and sometimes by Indian native princes, and are made of steel rings of 3-8 inch diameter. It takes about three thousand rings to make a square foot of armor. These rings are formed out of soft-steel wire of 14, 15, 16 or 17 B. W. G., which is revolved around mandrels 4 inches long, and of the same diameter as the rings required, each mandrel taking about six feet of wire, and subsequently divided by a hand-saw. Hardening is accomplished by putting them upon trays and plunging them when red hot into oil, after which they are polished in revolving drums — *Journal of the Franklin Institute*.

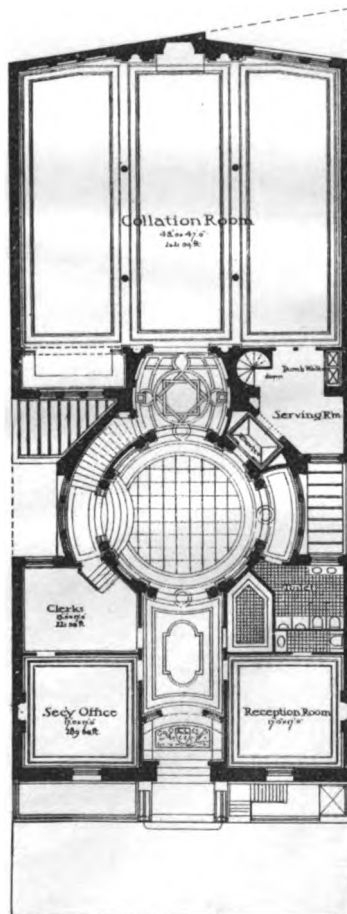
OLD RUGS FOR NEW. — The story of the late M. Piot and the Persian carpet is told in two reviews last month, *The Fortnightly* and *The Nineteenth Century*. Mr. Wallis's version in the latter review is as follows: Once, when at Venice, he engaged a gondola to make an excursion in the city. On taking his seat the gondolier apologized for the absence of a carpet, saying that some forestieri whom he had taken to Torcello the preceding day had soiled the one belonging to the boat by upsetting over it some fruit and wine, obliging him to wash it, and that it was not yet dry. Piot's eye glanced to where it lay spread out on the front of the boat. He quietly asked the gondolier whether he would part with it in exchange for a new one. The reply was that Sua Eccellenza was only too generous. Piot then gave directions to be landed at the first shop where carpets were sold. He there selected the smartest and gaudiest article in the establishment, which was straightway, to the great joy of the gondolier, laid down in the boat; Piot returned to his hotel carrying off the old one, and its examination soon revealed the treasure he had secured. The carpet had probably lain hidden away in some neglected corner of an old Venetian palace, and when found sold to a dealer in second-hand goods as a thing of little value. Piot eventually ceded it to a Parisian amateur for the sum — so it was stated — of 25,000fr. — *London News*.

House for Am Soc CE [a Competitive Design.]

W.B. Bigelow and F.E. Wallis: Architects.
Townsend Building: New York:



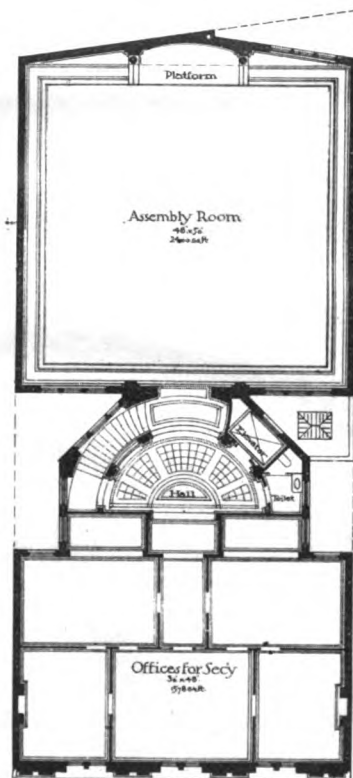
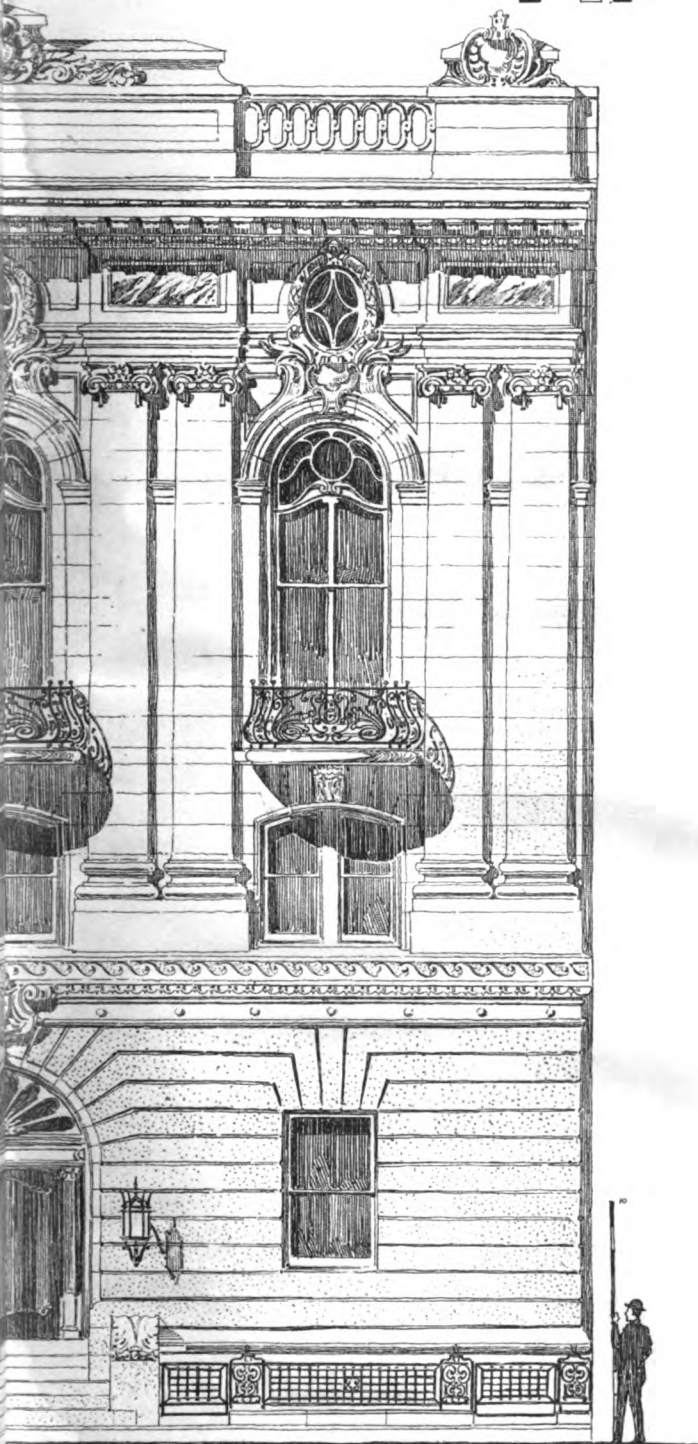
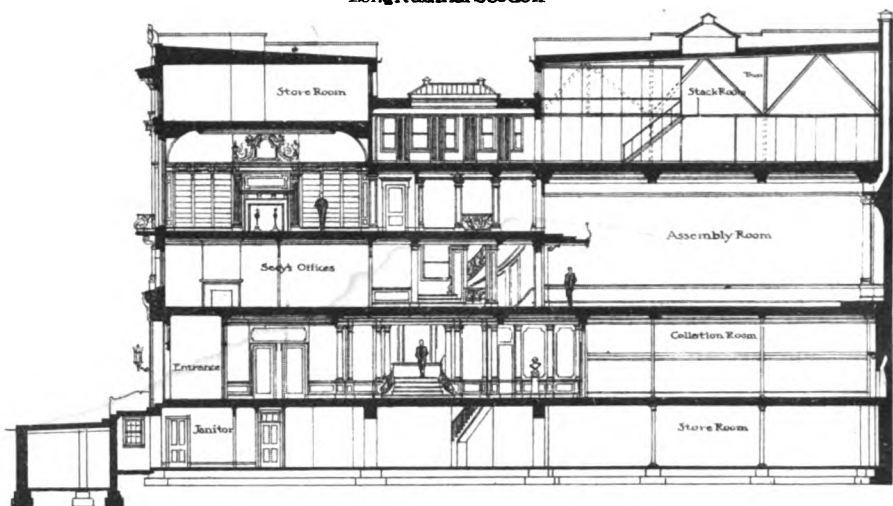
Plan of Basement



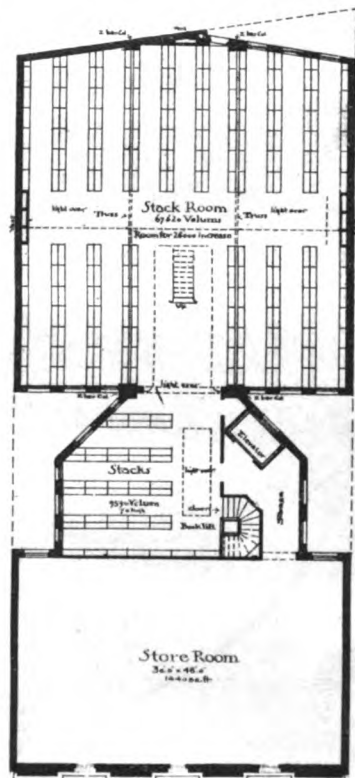
Plan of First Floor



Longitudinal Section



Plan of Second Floor



Plan of Fourth Floor

REYNOLDS PRINTING CO., BOSTON

Entered at the Post-Office at Boston as second-class matter.

DECEMBER 16, 1899.



SUMMARY:—

A Word to Subscribers to the Imperial Edition.—Part V of "The Georgian Period."—Impending Removal of the Boston Museum of Fine-Arts.—The Present Museum Building.—A Decline in Prices of Building-materials may be expected.—The Theft of a Dwelling-house in Chicago.—The Detroit Federation of Art.—Sidewalk Advertising.—Mexican and Maya Sculpture in the New York Museum of Natural History.	89
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Additional: The South Front: House of Giraud Foster, Esq., Lenox, Mass.—The Galatea Fountain on the Eugene-Plateau, Stuttgart, Germany.—The Town-hall, Roland Pillar and St. Mary's, Stendal, Prussian Saxony.—Proposed Depository for Harrod's Stores, Limited, Barnes, Surrey, Eng.—The Queen-Mother's Sitting-room, Amsterdam, Holland.—Residence, Plymyard Park, Bromborough, Cheshire, Eng.	95
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AS the complications that always attend a busy subscription-season are this year made much more serious and involved by the impending discontinuance of our Imperial Edition, we must ask the subscribers to that edition to lighten our difficulties and remove our uncertainties by notifying us promptly as to what is to be their action, in each case, under the circumstances; and we therefore beg them to let us hear from them during the next fortnight, whether with or without a remittance. It is important to know how these quondam subscribers are to divide themselves between the two remaining editions—International and Regular—since, if we are at the last moment forced to guess, we are quite as likely to go to press, for our issue of January 6, with an edition too small as with one too large to meet the actual demands of subscribers, and we would be as unwilling to cause disappointment and delay in the receipt of the journal by any subscriber as to incur the cost of printing a supplementary edition. When, a few weeks ago, we spoke of this change, we neglected to make the statement that in the cases of subscriptions paid beyond the close of the year the necessary adjustment of the account would be made as rapidly as possible. The copies of the International Edition sent during the past month to those not at present subscribers to it deserve to have their claims considered and tested by figures and any standard of comparison. They were not specially prepared for the purpose, but merely exhibit the ordinary make-up of our International issues. To tell the truth, they are rather below than above par, since, not foreseeing that they would be needed for such use, we did not increase the edition of plates imported from abroad and so had to expand to the required number by copying, and the copy of a reproduction is never satisfactory.

THERE is one further reason for asking subscribers to give prompt notice of their intentions. As announced, the Fifth Part of the "Georgian Period" will be given free to all paying subscribers to the International Edition for 1900, but we cannot go to press with this Fifth Part until we know how large an edition will be required.

SOME months ago, we ventured to observe that the present position of the Boston Museum of Fine-Arts, on Copley Square, was unsuited to the proper display of works of art, particularly for pictures, on account of the colored light reflected from the higher buildings in close proximity to it, and that, as the land on Copley Square was now very valuable, it might be wise for the Trustees to secure a tract of the vacant land in the neighborhood of the Back Bay Fens, which could

now be had at a low price, and would afford ample space, and unobstructed light, in a situation which would before long be very central. This suggestion was received at the time with derision by the *Boston Transcript*, but it seems that the Trustees of the Museum thought as we did, and, by purchases from a considerable number of owners, they have, during the past few months, secured a fine tract at the Huntington Entrance to the Fens, extending from Huntington Avenue to the Fenway, and containing something like twelve acres. In this large area a building can be planned which will accommodate the present and future collections of the Museum for many years to come, under the best conditions of lighting, freedom from dust, and isolation from other buildings, at the same time that it will be readily accessible, by way of Huntington Avenue, from nearly all parts of the city and suburbs. Under such circumstances the Museum should become more useful than ever, not only on account of its more central position in the residence portion of the metropolitan district, but because its galleries, better lighted, and freer from dust, and from danger of fire, than they can be in Copley Square, will be likely to attract a greater number of the loan collections, which have always formed an interesting and important feature of the Art Museum collections. It will be remembered that the Boston Museum of Fine-Arts is, in proportion to the population of the community in which it is situated, visited by more persons than any other in the country, except the one in Chicago, and it is a satisfaction to think that the efforts of the Trustees, who have made it such an important element in Boston life, will no longer be hampered by the unfavorable conditions which have, of late years, affected them in Copley Square.

IT is rather early to indulge in biographical comments on the old Museum building, as it is likely to continue in use for its present purpose for some time to come; but it may be interesting to recall the fact that it was one of the first buildings in the United States in which terra-cotta was used. When it was built, about twenty-five years ago, the Museum at South Kensington was barely completed, and Mr. Sturgis, one of the architects of the Boston building, had just returned from London, full of enthusiasm over the new material which had been used so successfully there. It can hardly be said, perhaps, that his choice of Italian Gothic as the style of the new building was quite happy, but it must be remembered that the Gothic Revival was then in full career, and, at that time, nearly all English architects, and a large proportion of American ones, resorted naturally to the mediæval styles to help them out of such difficulties as were presented by the necessity of designing a lower story filled with windows, surmounted by one almost without openings. Considering, therefore, the architectural tendencies of the time, Mr. Sturgis produced a composition which was at least interesting, and in good keeping, while certain portions of the building, including much of the terra-cotta detail, can justly be called beautiful. If we are not mistaken, all the terra-cotta work in the original part of the building was modelled and burned in England, and set up in Boston under the direction of a representative of the English makers, who, when his task was over, remained in this country, to direct the establishment of a small manufactory of terra-cotta, the pioneer enterprise in what is now a great American industry. Besides the new terra-cotta material, Mr. Sturgis introduced other technical novelties. If we are not mistaken, the South Kensington Museum was the first building in which Colonel Scott's "selenitic cement" was used, and Mr. Sturgis employed the same material to a certain extent in the Boston building, using, for preparing it, a mortar-mixing machine, then almost an unknown device here; and for the stonework, of which there is not much in the building, he selected a peculiar milky-white granite, from Randolph, Mass., which has, so far as we know, never since been used in any structure in Boston.

THERE are many symptoms that the culmination of the present high prices for building-materials has been reached, and that it will not be long before a substantial decline is witnessed. Iron, which is protected by an enormous duty, will probably be kept at the highest possible point, as long as the manufacturers can sell their surplus product abroad at a profit, but the price has already declined in London, and a fall abroad,

which would make it unprofitable to export iron, would be likely to lead to an accumulation of stock here, and consequent material concessions in price; while the new iron-working plants which are in process of formation in various places in this country and Canada will naturally try to get a share of the business by competition in prices. The check which building operations have suffered in consequence of the advance in materials is likely also to be felt in the iron market, as it has already been felt in the lumber market, pine being now sold in Chicago for less than it brought a few weeks ago, at the same time that the output is being immensely increased. With, as has been predicted, twice the usual quantity of new lumber for sale next spring, and an unusually small amount of building to use it for, prices would naturally fall, as lumber-dealers do not like, any more than other people, to pay interest and insurance, and, perhaps, storage, on unsalable stock. With Southern pine, for which there is a large export demand, prices can be kept up, in the same way as with iron, by keeping the stock at home small enough to avoid domestic competition, and to take full advantage of the tariff; but spruce and pine cannot be exported from the United States in competition with Canada, and any overproduction will produce its natural effect. Whether other metals will decline in sympathy with iron it is impossible to say. Tin-plate is lower, owing to a considerable fall in the price of block tin, and this should also affect the price of solder and of bronze; and copper and brass have also fallen slightly; but the great hardware manufacturers, who are large consumers, both of brass and bronze, are said to look for prices for their goods next year higher than the high ones which now prevail. On the other hand, a great reduction has been made in prices of window-glass, a cut of thirty-three and one-third per cent in single-thick, and forty per cent in double-thick, being just announced by the combination which controls most of the business. It is surmised that this is an attempt to crush the competition of the multitude of small manufactories which have sprung up, but it is probable that, even at the reduced prices, the small establishments can do business at a profit, and, so long as this is the case, prices are not likely to be restored.

AN extraordinary case of larceny is reported from Chicago. Some time ago, a man named De Young bought a double lot, with a house on it, on the corner of two streets in a certain part of the city. The house being vacant, he advertised for a tenant, and, in course of time, an applicant appeared. Mr. De Young went with his customer to see the house, and was, not unnaturally, surprised to find only the foundation. There were no marks of fire or tempest on the premises, and, in his search for the ruins of his property, he received another surprise at discovering the superstructure of his building in a lot some two blocks away, resting on a new foundation, and occupied by a tenant, who professed to know nothing of the migrations of his abode, and said that he was paying his rent regularly to the owner of the lot on which the house now stood. Mr. De Young, not being able to carry his house back to its place himself, has now brought suit against the owner of the lot on which it stands, Mrs. Jane G. Patterson, to compel her to restore it to him, and to account to him for the rents which she has received for its use.

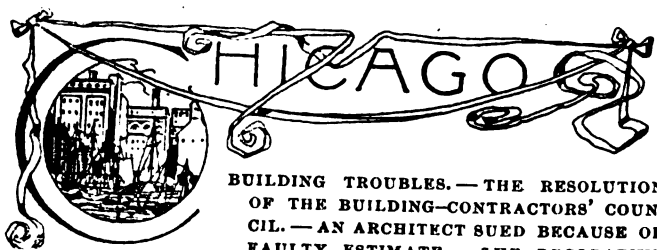
IT is not probable that Mrs. Patterson was a party to the stealing of the house, which is more likely to have been an enterprise of one of those "hustling" business-men of whom, as we are told, Chicago is so proud. It would not be difficult to move a wooden house, such as this seems to have been, a few hundred feet over level ground, and set it on a new foundation, prepared, ready for it, on a lot belonging to the speculator, and sell the whole at a bargain to some one with money to invest; and the operation would be comparatively safe; for the moving of a house is an everyday occurrence, which would not excite the suspicions of the neighbors, and the new purchaser, finding the title to the land unencumbered, and receiving a satisfactory explanation of the moving of the building, would pay, with full and justifiable confidence, the purchase-money, which it is needless to say, would immediately disappear from the view of attaching officers and sheriff's deputies. Meanwhile, the real owner would be likely to find some difficulty in getting pecuniary satisfaction for his loss. It is very doubtful whether an innocent purchaser of land is obliged to ask whether the buildings that he finds on it came there honestly, or can be compelled to give them up to another claimant, for the reason that the laws concerning real-estate are framed, in general,

with the purpose of preventing disputes, by requiring notices and records, so that a person who has complied with the necessary formalities in buying can rest secure in the possession of his property, without fearing to be deprived of it by ancient or trumped-up claims against former owners. This is certainly in the interest of reason and justice, and, while the owner of portable goods, which have been stolen from him, can reclaim them wherever he finds them, the case is, and should be, different with a building. No doubt, the man who steals a house can be punished as a criminal, if he can be caught, but it will be interesting to see whether the house itself can be recovered from an innocent purchaser.

THE five principal artistic societies of Detroit, including the Architectural Club, the Michigan Chapter of the American Institute of Architects, the Water-color Society, the Art Association and the Ceramic Art Club, at the instance of the Architectural Club, have taken steps to form what is to be known as the Detroit Federation of Art. This organization is intended to unite the resources of the various societies in encouraging local art, and influencing and directing public opinion in artistic matters, and it should have a great opportunity for usefulness in what is already one of the most beautiful cities in the United States.

M. CHEVALLIER, a well-known architect of Nice, in France, describes an advertising scheme of his invention, which will interest many people here, as well as abroad. It appears that the principal street in Nice, the Avenue de la Gare, is greatly frequented, and rents have risen to such a height that a certain building within M. Chevallier's knowledge, which cost, including the land, fourteen thousand dollars, is now leased for five thousand dollars a year. Naturally, every tenant cannot afford to pay such a rent, yet the people who do not possess establishments on the Avenue de la Gare would like to make their existence known to the people who walk along that street; and one of M. Chevallier's clients, a restaurant-keeper, requested him to devise a plan for accomplishing this object. The architect, reflecting that people in city streets walk with their eyes directed generally downward, so as to see where they are to step, concluded that the best location for an advertisement would be the sidewalk. Studying the nature of the advertisement that would be most suitable for his client's purpose, he decided, if he could get permission, to cut a little pit in the middle of the sidewalk, and cover it with a sheet of thick glass, on which the announcement desired should be inscribed. In the present case, the inscription would merely call attention to the fact that an excellent restaurant was open at a certain number on a neighboring street, but this simple piece of information, which was to be rendered intelligible at night by two incandescent lamps beneath it, was to be reinforced by a graphophone, also placed in the pit, which would recite at frequent intervals the *menu du jour*. The Grande Voirie, or, as we should say, the Department of Public Works, of the city approved the plan, and one of its officials even suggested the use, in place of the glass, which would become dim with wear, of a plate of sheet-iron, with the letters cut through it; but the Voirie Urbaine, or Street Department, made difficulties, and M. Chevallier has not yet been able to carry out his idea, which he willingly imparts to his professional brethren.

THE Museum of Natural History in New York has just thrown open a fine collection of casts of Mexican and Maya sculptures, and of copies of manuscripts in the Mexican and Maya hieroglyphic writing, so that now, perhaps for the first time, the student is enabled to compare a large number of inscriptions, and in this way, probably, to discover the key by means of which they can be interpreted. When once the key is found, a new chapter in the history of America and of the human race will be opened to us, just as the discovery of the Rosetta stone, and, later, Rawlinson's successful study of the cuneiform inscriptions, extended our definite historical knowledge over a period, anterior to the first Olympiad, from which history proper formerly took its beginning, nearly three times as long as the whole period from the first Olympiad to the present day. Except that we have no traditions or poetic legends to give a clue to the Maya history or mythology, there is no reason why the Central American hieroglyphics should not be deciphered, perhaps as easily as the cuneiform inscriptions; and it is to be hoped that the New York collection may attract many students, ambitious to win the reputation which certainly awaits the person who first interprets them.



BUILDING TROUBLES.—THE RESOLUTION OF THE BUILDING-CONTRACTORS' COUNCIL.—AN ARCHITECT SUEDE BECAUSE OF FAULTY ESTIMATE.—THE DECORATIVE SUCCESS OF THE RECENT CIVIC CELEBRATION.

VOLUMES have already been written by the local press concerning the present state of the labor troubles here in Chicago, and the more one reads the less one seems to know about the actual condition of affairs, and certainly the farther off seems any chance of adjustment. As mentioned in our last letter, the demands of the Unions have simply been growing beyond the point of endurance and the contractors' associations have at last turned, like the proverbial worm, and now it is a question with many right-minded people which are being the most exacting, and while actually neither one nor the other may be entirely right or wrong, the fact remains that all building interests are completely stifled here in Chicago and a quietus put to all building activity as effectually as when faint-heartedness lighted on the builders of the Tower of Babel. Building enterprises in neighboring cities have, it is said, increased about nine per cent over those of last year, while with us almost no new contracts are being signed for 1900, and the work now on hand is being pushed as rapidly toward completion as circumstances will permit.

As far as the Unions are concerned, the walking-delegate is one of the primal causes of all the trouble, and the contractors' associations seem to take the stand, that the time has come for fighting his meddling interference, and are no longer struggling for an amicable settlement that will start up activity again in building circles, but have set their faces firmly against the disagreeable fact, have squared their jaws and say, "No! we will not starve as soon as some other people, and we'll fight it out now, in this year of grace 1900, which is about to dawn for us." So their attitude has not been one of conciliation, and the calamity of enforced idleness to hundreds and hundreds of men in our city, of all classes, from the architect down, seems to be the direct outcome of the trouble, though what the ultimate result will be it is at this writing impossible to tell.

About two weeks ago the Building Contractors' Council, which is practically a committee representing all the various trades, issued the following resolution, which shows, in a nutshell, the existing conditions on one side of the question.

"Whereas, all branches of trade and commerce in Chicago, except the building trades, are sharing the general prosperity of the country; and,

"Whereas, in contrast to other large cities, a steady decrease has taken place in the number and amount of the building-permits issued in Chicago; and,

"Whereas, the cost of building-construction in Chicago has been increased by the action of the Trades' Unions affiliated with the Building Trades' Council, in limiting the amount of work a man may perform in a working-day, in some instances cutting his activity in half; and,

"Whereas, an additional expense has been caused by the prohibition on the part of certain Unions, members of the Building Trades' Council, of the use of labor-saving machinery; and,

"Whereas, the cost of construction has been further increased by the costly and harassing delays caused by strikes, sympathetic strikes and lock-outs, due to the arbitrary, unjust, and often lawless, acts of the business agents of said Unions; and,

"Whereas, this state of affairs has reached a stage where the best interests of workmen, contractors, architects, owners and the city at large are in jeopardy; therefore, be it

"Resolved, That, on and after the first of January, 1900, the trades represented in the Building Contractors' Council shall not recognize:—

"First.—Any limitation as to amount of work a man shall perform during his working-day.

"Second.—Any restriction of the use of machinery.

"Third.—The right of any person to interfere with the workman during working-hours.

"Fourth.—The sympathetic strike.

"Fifth.—Any restriction of the use of any manufactured material, except prison-made.

"Sixth.—The right of the Unions to prohibit the employment of apprentices.

"And be it further

"Resolved, That a copy of these resolutions be sent to the Building Trades' Council and its affiliated Unions, as outlining the position of the Building Contractors' Council with respect to conditions existing in the building trade at the present time that are detrimental to the welfare of all the parties concerned, with the assurance that there is no disposition on the part of the Building Contractors' Council to question the present rate of wages, hours, or the principle of legitimate Unionism."

The Building Contractors' Council represents some of the strongest master-contractors' organizations in the city, and the names of nearly all the large contracting firms are enrolled in some one of these organizations. Consequently, it ought not to be a weak organization which has taken a stand against what we all know is a hydra-headed power, the Chicago Labor Unions. Notwithstanding the fact that strong organizations are represented in this Council, the only one which has as yet formally pledged itself to accept them is that of the plumbers, and they have actually thrown down the gage of battle. It is not improbable that before January 1, many, if not all, of the remaining trades will, themselves, follow this example, although there seems yet to be considerable question on this point. As a matter of fact, these master-contractors are as yet only very lightly bound to the association and a most extraordinary amount of jealousy and bitter feeling, occasioned by very sharp competition and often equally sharp dealing, causes many of the members to be so arrayed against one another as to make any really strong concerted action extremely difficult.

So much for the conflict between the contractors and the Unions, which is in reality but a very small part of the difficulty. Besides this actual friction with the workers the various masters' associations are so bound and tied by various regulations and rules, compelling them to buy material only of certain parties, that all reasonable freedom of competition has been lost, and yet any infringement upon such regulations is followed by a sure and quick fine of sufficient proportions to terrify contractors of ordinary capital. To shake themselves free of this incubus and, at the same time, shake off the rule of the Unions is the great problem to be solved by the building trades. Consequently, the outlook for building in our city was never worse than it is now at the close of the year 1899, and time alone will show what will be the outcome of it.

Now that our minds are no longer distracted by the sight of noble buildings rising towards the blue around us, or by any similar flight of hyperbole, and our thoughts are kept constantly on strikes, lock-outs and decisions of the court, a matter of the last character bids fair to become of especial interest to architects from its very novelty.

This is a suit brought against an architect, Warren H. Milner, by a client of his, Mr. W. S. Barbee. Mr. Barbee claims that he arranged with his architect for plans and specifications for a building which should cost \$37,500. The price agreed on for such plans was \$1,500, a sum considerably less than the customary five per cent. The architect "warranted" the plans and specifications were for a building which should not cost more than this stipulated sum. What this warrant consists of will be the key to the situation. When the final contracts were let, the cost of the building was found to be \$48,000, and this advance in price, it is claimed by the plaintiff, has entirely ruined him, as he has been obliged to sell the property at a sacrifice.

Should this case be carried through it would be one of a great deal of interest to the profession. Such a condition of affairs does often exist between clients and architects, and more is the pity. The architect, on his side, is often not honest with his client as to the estimated cost of the structure, while, on the other hand, the client oftener than not forgets the luxurious extras he has ordered and only keeps the original modest figures in his head. Should the suit be decided against Mr. Milner it might be a means of changing the too often undesirable relations existing between client and architect.

In the last letter the fall festival in commemoration of the Chicago fire, the war with Cuba, or some other forgotten event was mentioned. The celebration was to consist entirely of civic parades and municipal decoration. It was in anticipation, in these letters, that the whole affair was looked upon with the eyes of the pessimist, and cold shivers were spoken of as being in readiness to run down the back of any artistically inclined person upon sight of the decorations. It was all a tremendous surprise and an agreeable one, and you were lost in amazement how in a short year we could have learned so much. The actual celebration now is ancient history, but the spirit which animated it, we hope, has come to remain with us and thrive. There was not the sprinkling of decorations all over the city, with a hit-or-miss, go-as-you-please air which resulted in nothing or worse than nothing. This year all was grouped in one street, it had been studied out as a whole and had been put into hands competent to handle it. Staff and plaster entered largely into the decorations, and the architectural features were very strong ones. At each end of the allotted space triumphal arches marked the limits, the northern one being especially successful, bearing huge allegorical groups, the work of Mr. Lorado Taft. The general scheme was very charming, and especially in the evening, when festoons of electric-lights stretching from Venetian masts made everything brilliant, and huge torches of gas smoked and flamed from rostral columns. It was hard to realize that this was the usual,

matter-of-fact State Street known to our elegant shoppers or eager bargain-hunters. The thing itself was pleasing, but the spirit which animated it and produced such results was of all the most gratifying.

MARBLE.¹—II.

THERE are dozens of old quarries on the island of Eubœa that have been examined by French, Germans and Italians during the last twenty years for the purpose of re-working, but in all cases it was found that the Romans had taken all the good stuff away. About four years ago a mountain that slopes down to the sea and away from any mule track was found, on its sea-face, to have a large number of old quarries. These contain an almost inexhaustible quantity of first-class marble, which can be got in large sizes.

These quarries I am now working, and those interested can see monoliths made of it, some fourteen feet long, for the new Roman Catholic Cathedral at Westminster, and you will also see it at the Royal Academy in the vestibule improvements. Some twenty years ago a Swiss Cipollino was found with colorings very similar to the old, but with very different markings, as it does not produce when opened out grand patterns, and, although it stands well in detached monoliths, experience proves it will not stand on new walls or floors.

Some thirty years ago a very extensive deposit of arragonite was found near Tlemcen, in Algeria, and the old quarries were here from which the Moors obtained this beautiful marble, so plentifully used in their mosques at Tlemcen. The purchaser of these quarries was Signor Del Monti, an Italian resident at Oran, and he it was who for commercial purposes named the material onyx, from its translucency, like the finger-nail. This misnomer "took on," and is now generally applied to all this class of very translucent marbles, some of the most beautiful of which have of late years been found in Mexico and in South America. Just recently it has been found in the Caucasus. The name onyx appears very appropriate; but it would be better to call it lime-onyx, so as not to confound it with onyx proper, which is silicious. The formation of this material is most likely a deposit from hot springs, such as goes on now at several well-known springs in different parts of the world—the rock Oriental alabaster used so extensively by the Egyptians, of which the most exquisite example is the famous sarcophagus in the Sir John Soane Museum. The Egyptian quarries are in the eastern desert; they were re-opened and extensively worked by Mahomed Ali for his great mosque at Cairo.

The beautiful monoliths which support the baldachino over the high altar at St. Paul's, outside the walls of Rome, were presented by Mahomed Ali. This Arragonite marble is produced chiefly by the lime-water droppings from the roofs of caves forming stalactite and stalagmite.

A short time ago I visited some very interesting deposits in Trazos Montes, Portugal. One very large cave had a floor thickness of some six feet, with hundreds of stalactites actually extended until they were engaged to the floor-mass, forming a labyrinth of natural columns, and other caves had become completely filled up, so that blocks of very large size could be extracted quite sound. Last year also was discovered at Amiato the quarries that supplied Rome, Sienna and Naples with the brown, yellow and honey varieties.

The coloring of these marbles is usually iron in solution. As beautiful as the Mexican varieties of onyx are, they are rarely successful when used in architecture, for wall surfaces, or mouldings. For articles of vertu, as room embellishments with ormolu, as used by the French, they are a decided success. The yellow and brown variety, which is Algerian, is less translucent, as seen in the Paris Opera-house, and there is not the same difficulty in using.

The serpentine marbles, of which we have extensive and massive rocks at The Lizards, in Cornwall, and Banff, in Scotland, although beautiful, have never proved of much architectural value, chiefly owing to the thin veins of steatite containing iron pyrites, which expand when exposed and cause the work to split up.

It was used considerably thirty years ago in Gothic work, and several good fonts were made.

There is no doubt the broader and simpler the material can be treated the better.

The French would seem to have been more successful than we have with this our own material, as there is in Paris an important front near the Place de l'Opéra which is certainly very good and is standing well.

The massive architraves to the doorways of the old museum in Berlin, by "Schinkel," are made in a gray-green serpentine, very dark in color. These large doorways are grand and impressive.

France is very rich in colored marbles; the most important are those of Sarrancolin, the reds of Cannes, near Carcassonne, the yellows of the Jura and Du Var.

The Roman quarry of Bianco, Nero Antico.

The mottled reds and greens of Campan, and the green of Maurin. There is a complete series of 700 cubes of French marbles in the National School of Public Works, in Paris.

Algeria is famous for rich reds. Those of Oran and Chennoua are the best; the latter were used in our National Gallery.

Spain has also grand marbles. A good collection of these, which number about two hundred and fifty, will be found in the Mineralogical Museum of Madrid.

Portugal has famous quarries of rose-color, near Cintra.

You are all familiar with our beautiful Devonshire red and gray marbles, of which there are a considerable variety, many of which are sound and good, and far superior to the Belgian reds, but owing to heavy railway rates cannot compete at all in price. The same remarks apply to the Derbyshire and Staffordshire ones, which have almost gone out of use. This is sad when we consider the first marble mills in this country were those of Ashford, near Bakewell.

Ireland has good marbles, too. The Connemara green is unique and the black is excellent, but still the carriage and bad quarrying beat them.

The fact is that more beautiful foreign marbles, owing to water carriage, can be got into London for as little or less cost than our own. It is pleasing to know that England has always held her own in marble work. I do not think anything can be found better done or more difficult than our old Purbeck, Early English and Early Decorated work. You will call to mind Westminster Abbey (with its chapter-house and tombs), the Temple Church, Salisbury and Lichfield, and Royal Tomb of Edward II at Gloucester, the Shrine of St. Alban, the Grey Monument at York, and the elaborate Bishop's Tomb at Rochester.

We have in Derbyshire extensive deposits of a beautiful decorative stone that is used extensively for interior work, and which comes in cost between marble and stone.

I mean the sulphate of lime, alabaster. This must not be confounded with Oriental alabaster, which is a carbonate of lime, and hard, while our English alabaster is comparatively soft, but tough, and takes a good polish. For monumental work it has been used since the thirteenth century, and during the Decorated and Perpendicular periods it became the material most used for effigies and altar tombs, most of which are very beautiful, but the grandest period for its use was the English Renaissance. The important monuments erected in this style are artistic productions with an individuality of which we have reason to be proud. Just look at the examples in Westminster Abbey; their delicate and bold mouldings in contrast, the alabaster with a dull polish, only sufficient to show the color; their inscription slabs and columns of black marble, the whole effect heightened and brought together by a judicious use of color and gold; further to perfect their color-scheme, they sometimes diapered their black shafts with delicate surface-work. Their inscriptions were cut with a flat ground, not V-shaped; the result is they are readable at any angle.

In the modern finish and polish of alabaster my conviction is that in intricate and delicately moulded work, with carvings and sculpture, glass polish is a mistake. And as alabaster is used instead of marble on account of cheapness, if we leave out the polish we further reduce the cost. Nothing looks worse than some parts polished and others not. Sooner than polish carvings, do as the mediæval men did, gild them.

In Rouen Cathedral is a splendid monument of the time of Francis I, executed in English alabaster. In the north of Spain, near Burgos, we find grand monuments, made in a delicately yellow-tinted alabaster, nearly as hard as marble. The old workings would appear to be lost; I have spent much time in trying to find them, without success, although I found an inferior variety something similar.

Alabaster is an excellent material for lining the walls of hospitals, as it is non-absorbent, and is not affected by acids. It contains about fifty per cent of water, and is so hydrated that it will not absorb any more liquid, but if heated to over two hundred degrees Fahr. it parts with its water and turns to plaster-of-Paris, so it is not suitable for chimneypiece work next the fire. Most of the imitation marbles that periodically appear are alabaster baked, which will then absorb any fluid color you like to apply. The Italian statuettes we see so much about are often only white translucent alabaster of Volterra, which is boiled, producing an effect similar to statuary marble.

Although not marbles, granites are decorative stones, and a very important industry that has made immense progress the last thirty years is that of granite work. The Scotch of Aberdeen are entitled to the credit of this revival, which may be accounted for by the superior quality of their granites, their grays, reds and rose-colors being excellent. The amount they do in monumental work alone is enormous, immense quantities of which go to America.

The last few years have made us acquainted with the beautiful granites and labradorites of Norway and Sweden. These the Aberdeen workers import in rough block. It is only of late years that granite could be sawn economically. This is now done by the aid of chilled-iron shot or crushed steel, which are American inventions; and lately they have given us another still harder material, carborundum. This is next to the diamond in hardness, but it appears to lack toughness, as it soon crushes up into mud.

There has been used within the last few years in our street buildings a large amount of polished granite work, and when it is broadly detailed and kept to one tone of color it looks well. But I do not think we should like to see Waterloo Bridge and the Embankment polished, and certainly polished cemetery work generally looks very hard and uninteresting, while all monuments designed on Celtic lines are ruined whenever polished, and nothing can be worse than trying to get effect by cutting off the polish to produce a pattern.

Of all decorative architectural stones ever discovered, none has yet been found to surpass the Imperial Egyptian porphyry of the

¹A paper by Mr. William Brindley, F. R. G. S., read before the Architectural Association, November 10, 1899. Continued from No. 1250, page 87.

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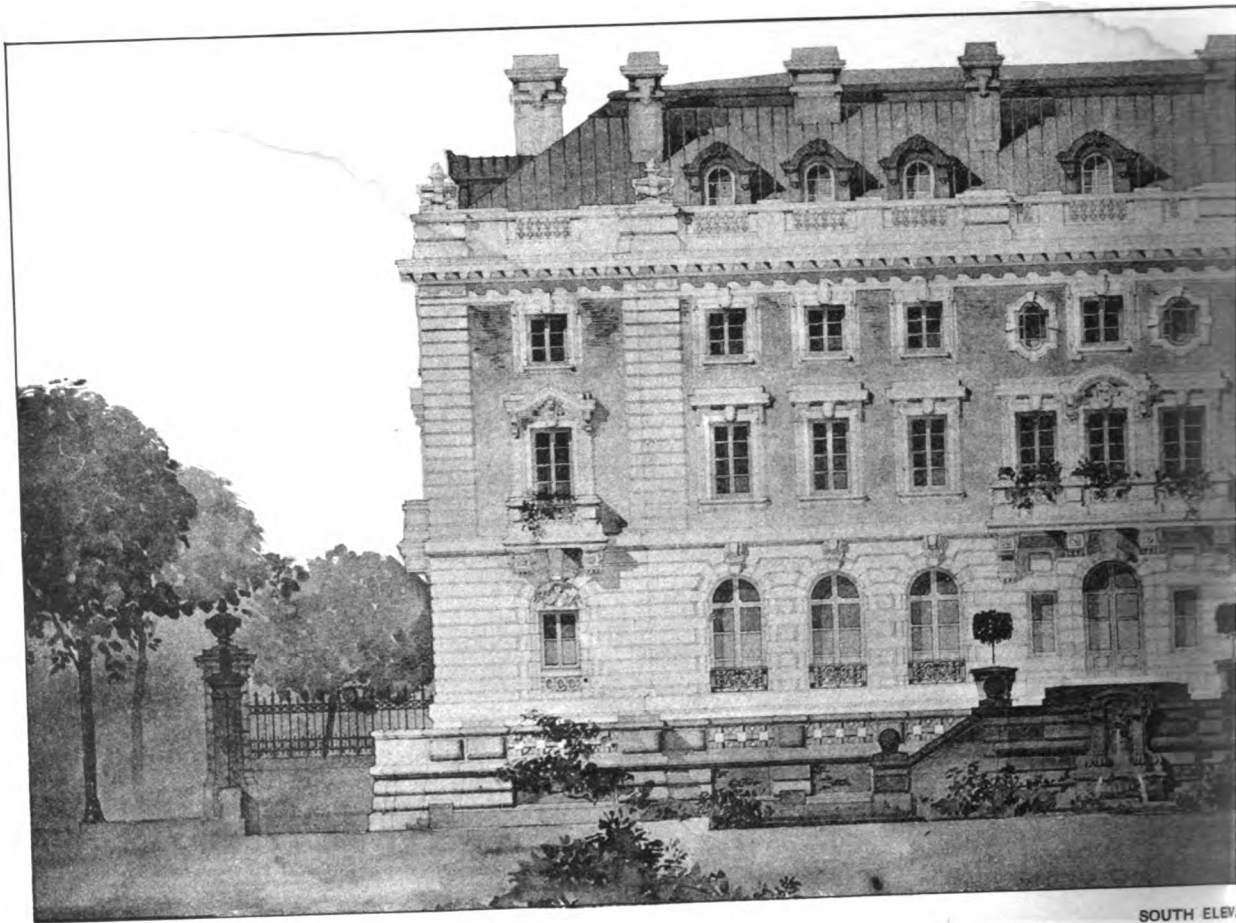
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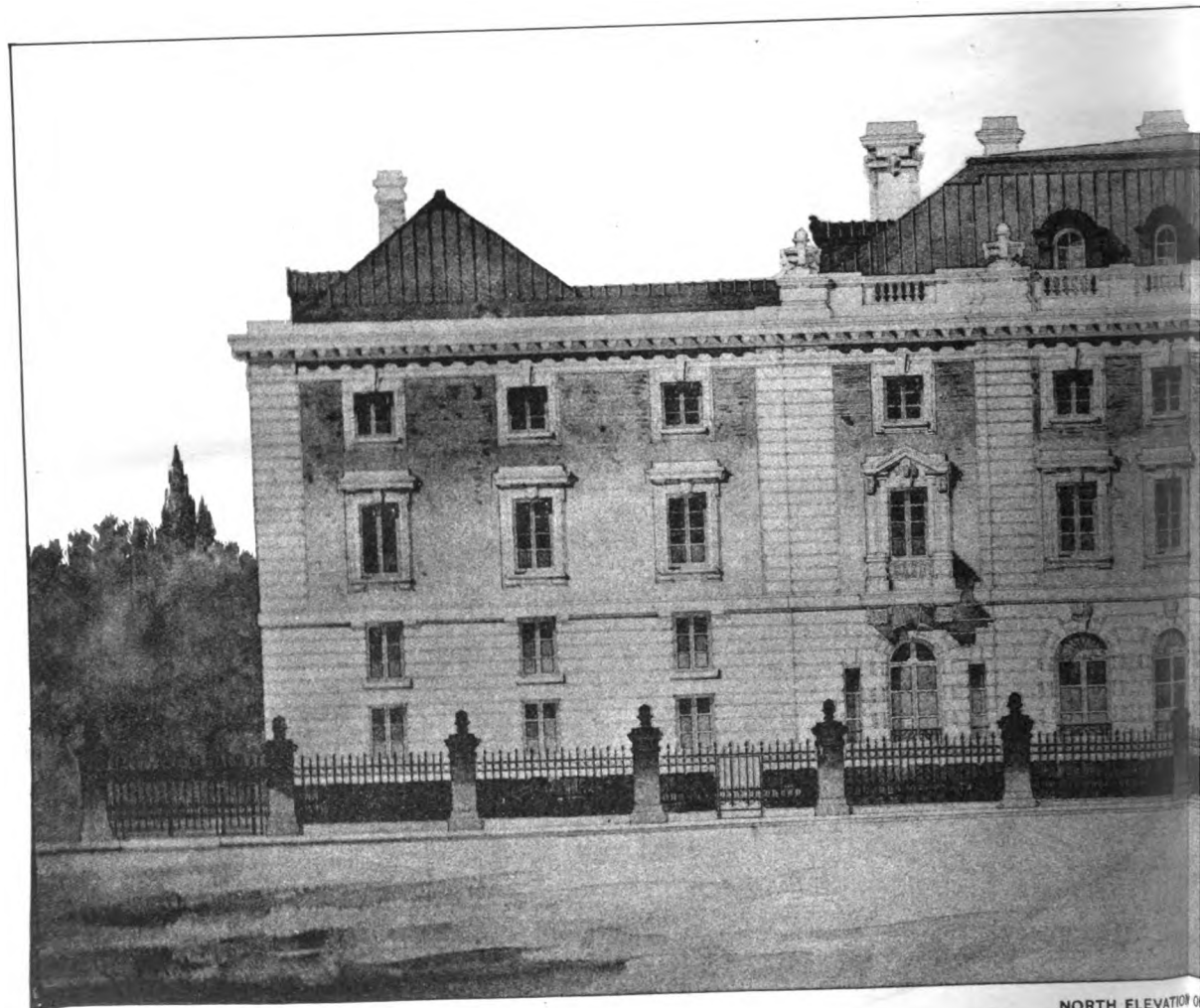
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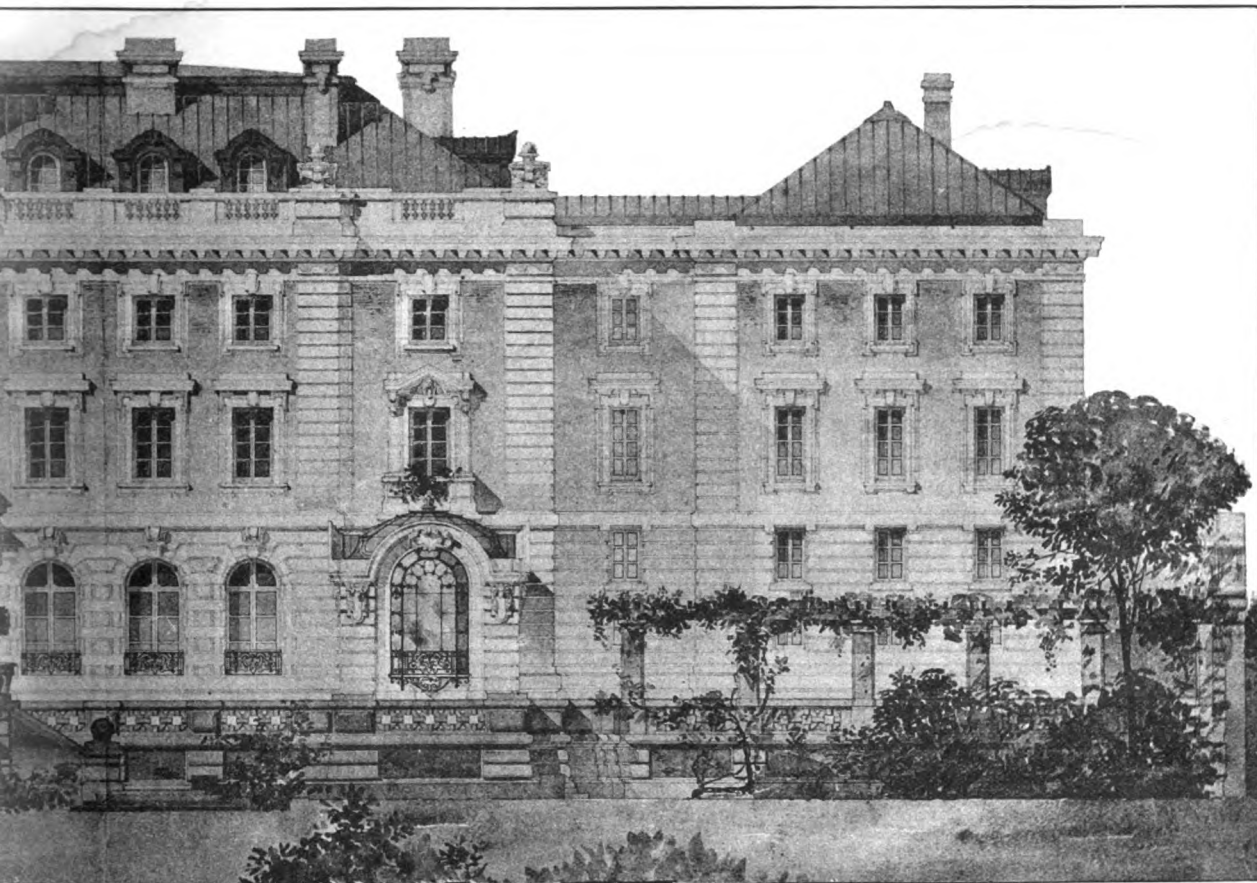


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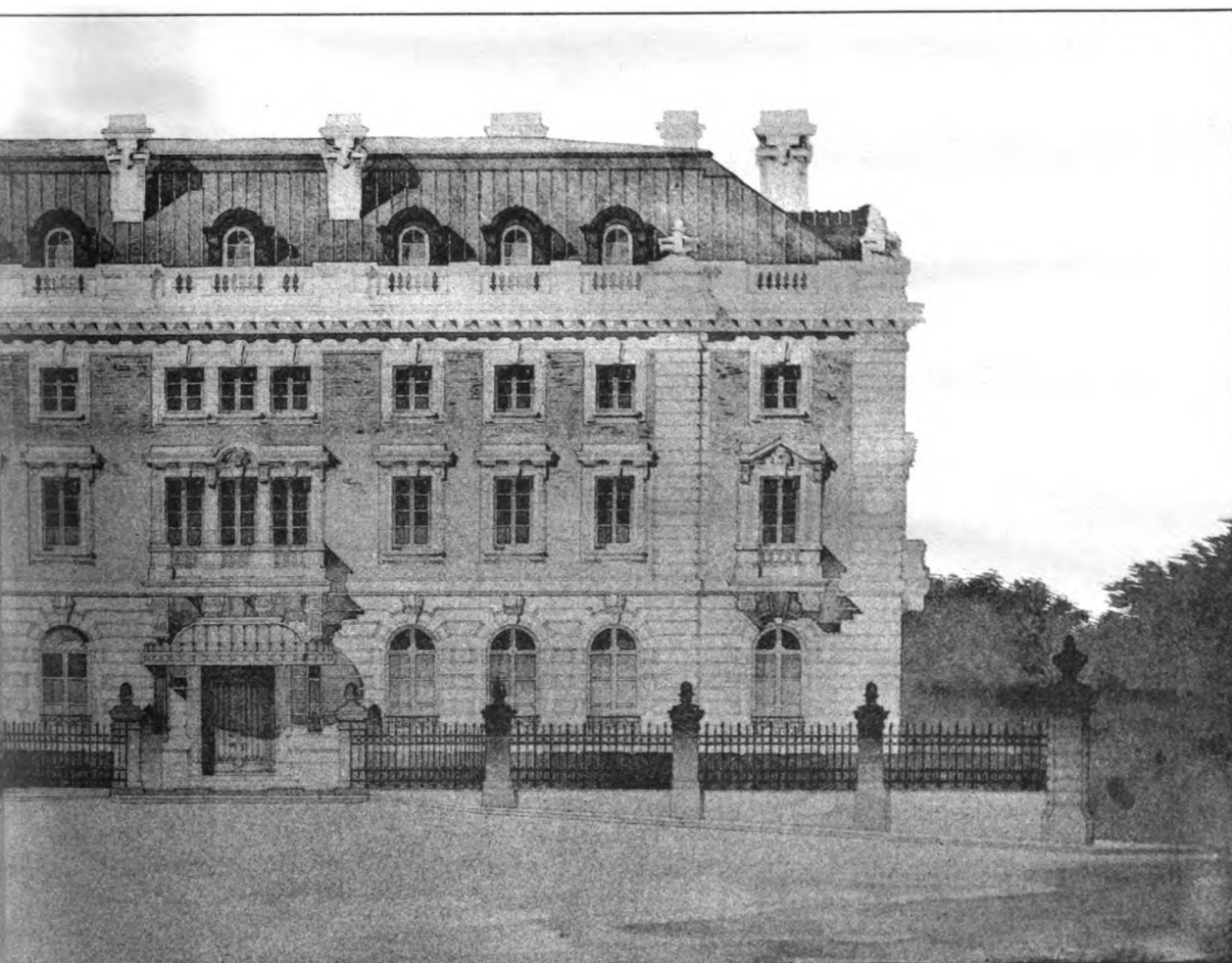


NORTH ELEVATION

HOUSE OF ANDREW CARNEGIE
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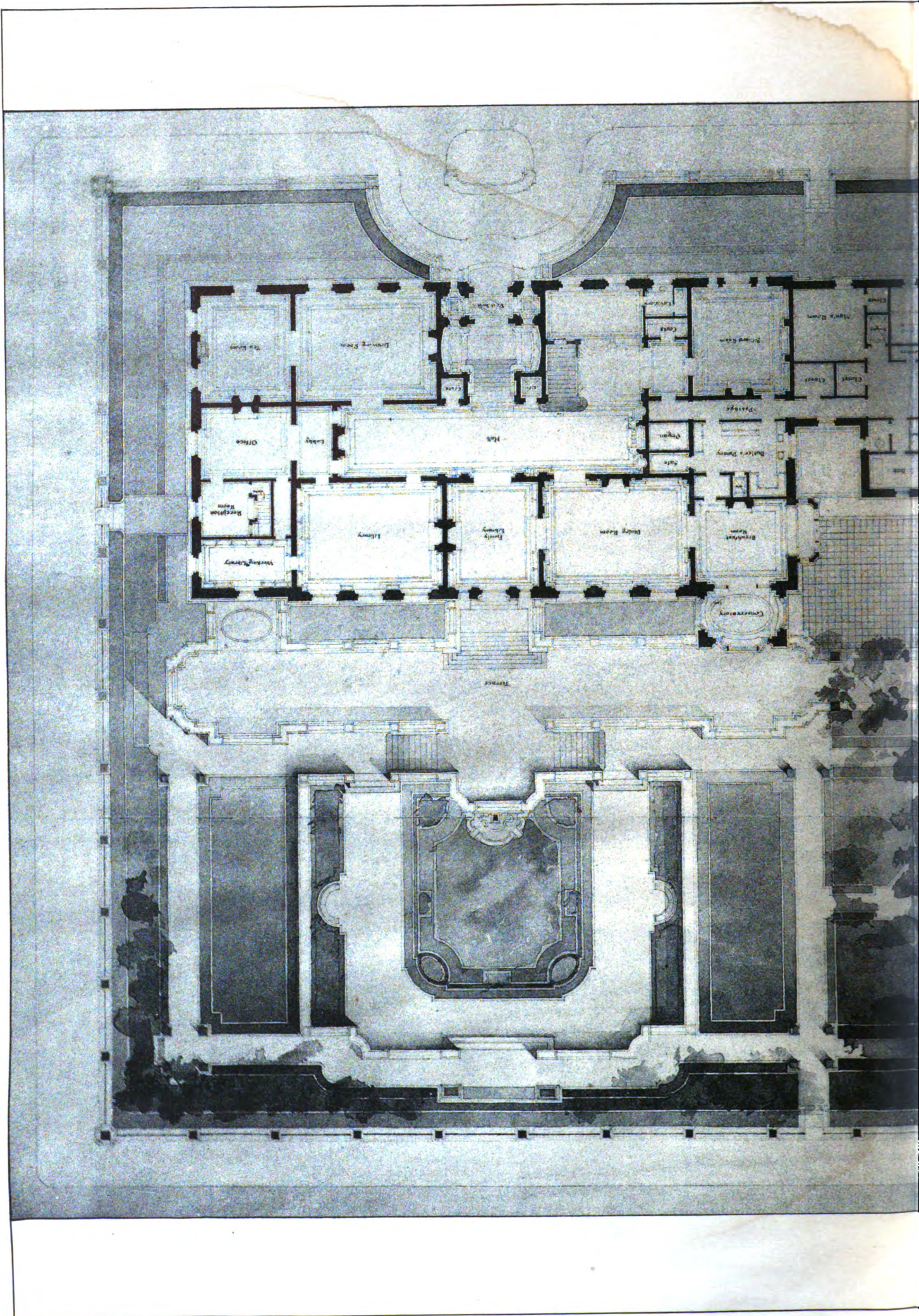


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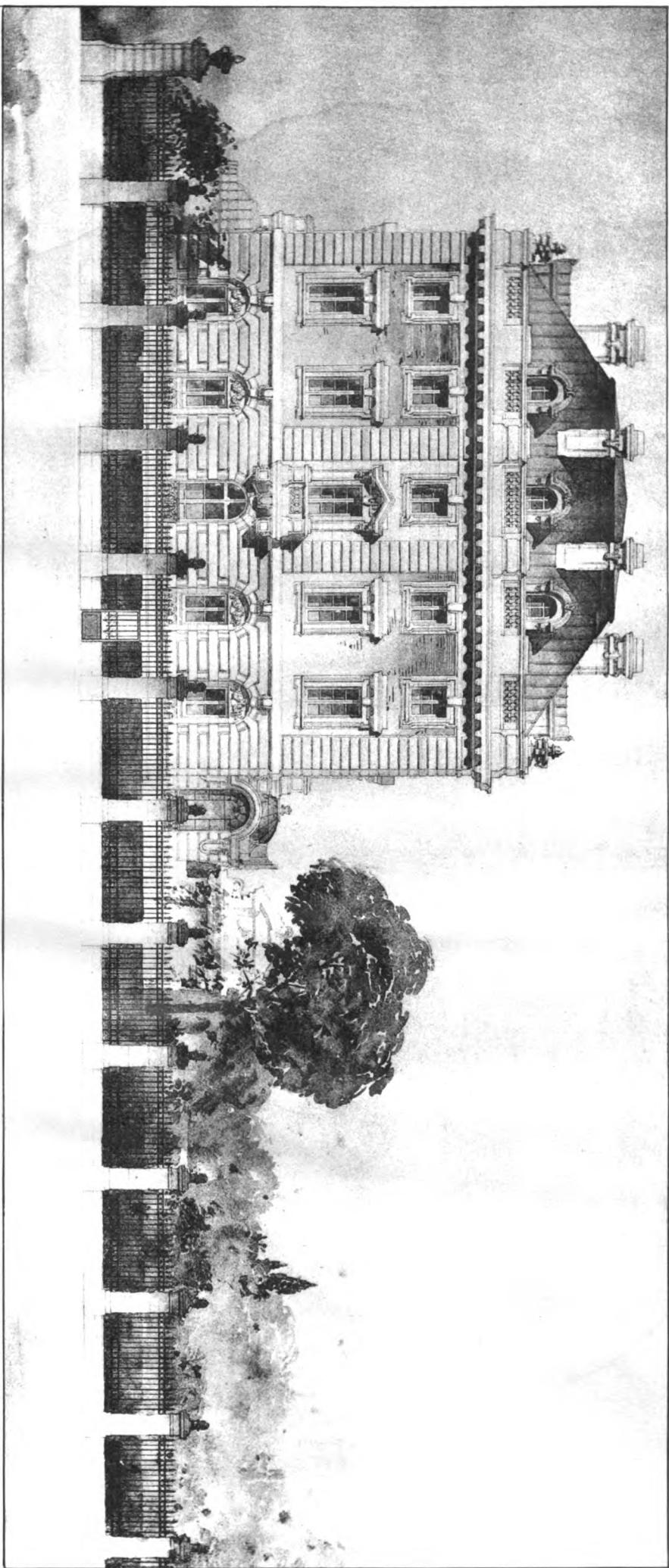
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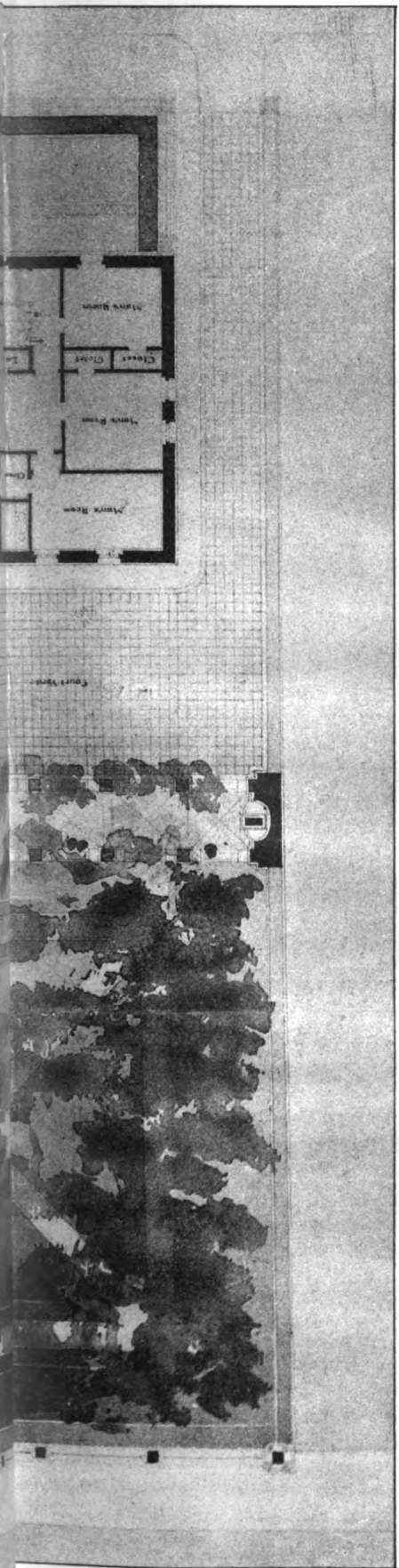
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ELEVATION ON FIFTH AVENUE.



Romans. Its purple color is unique, which color it will retain for ages unimpaired; it is rich, but not gaudy, and is one of the chief color-glories of the churches of Rome. What would Henry III's tomb look like if the porphyry slabs were removed? Porphyry columns are the chief glory of St. Sophia in Constantinople, and it is so appreciated by every custodian of an Italian church that if he has only a fragment he is sure to show it you.

The old quarries of Mons Porphyrites are only about twenty miles off the entrance to the Gulf of Suez. There is an inexhaustible quantity of the choicest material remaining, and through the Suez Canal it can now be got to Europe at a very reasonable cost, and with improved methods of working might be available to us for structural decoration, the same as it was with the Romans.

The only thing wanted to achieve this is twenty-five miles of tramway. The gradient to the sea is one in eight.

A very complete collection of the marbles of the United Kingdom will be found in the Museum of Practical Geology, also in the Natural History Museum. Foreign as well as British specimens are fairly collated. Then, again, in the British and South Kensington Museums many interesting pedestals and works of art in colored marble may be seen; also good examples of Roman pavements.

In the University Museum of Oxford is the famous "Corsi" collection, consisting of 1,000 specimens; these, I am delighted to say, have now fallen into the keeping of Professor Miles, who has had them placed in a good light. Many at present are in drawers, but he will be pleased to show them to anybody interested. There are two similar collections to the Corsi, made by Belli — one in Brussels, Musée du Parc, the other at the University Museum in Rome. The museums of Edinburgh and Dublin have each a fine collection, chiefly British.

Labor with the Classic Greeks was of little consideration, as they certainly finished their works regardless of cost, but their white marbles in architecture they never polished (except the joints, where it could not be seen); everything was left from the tool. There were no bright shining surfaces to reflect and injure the form. Polish you do not see anywhere on the Acropolis at Athens, and in the hundreds of beautifully sculptured "stelæ" of the museums of Athens, London, Paris and Berlin you find nothing but tool finish.

For London and English towns, with our smoke and dust, we may require a finished surface that dust will not cling to, but I do not think bright polish helps us very much, for we all know how dirt will even cling to the surface of glass.

Colored marbles, to bring out their beauty, have to be polished, but even in these, glass polish has sometimes a glarish look.

The pavements of the Egyptians and Classic Greeks were close-jointed thick slab blocks. Later the Greeks produced a few examples of tessellated mosaic. But the most important pavement period was undoubtedly that of the Romans, which in the beginning of the empire was a continuance of Greek designs and methods, most likely executed by Greek artists and workmen.

The universal system soon became, throughout Rome and her extensive colonies, that of tessellated mosaic, which they executed in such a way that has never been equalled since. Just call to mind the infinite variety of design seen in these pavements; many are figure subjects, heads and every description of animated life, from fish of all sorts, swimming in the waters, shell-fish, and nets on the beach, animals of all types in quick motion and *passant*, grouped and posed naturally and artistically, that few artists even now can equal. In addition to all this animated drawing, tree foliage was treated freely, growing, full of life, but adapted in the ablest of design to its purpose; plants of all sorts were grouped, and conventionalized, to fit their position. Leaves and flowers arranged in circling wreaths, others as borders, straight and curved, of fret and guilloche, interlacing round circles and angular forms, with the greatest of ease and freedom.

All we now know and can do by the aid of reference help, the Romans knew in the third century. They also knew how to execute durable work by having a good, proper foundation, and using tesserae three times as deep as ours, making that much firmer key.

How little we know about the artists and art-workers of these Roman tesserae pavements! It would appear that with every Roman legion there must have been a corps of sappers and miners, as they practically found everything in the way of useful rock and mineral veins, which they worked on scientific methods. They, further, must have had a sort of artists' corps, consisting of art designers and workers, or these art pavements never could have been produced. We may further ask: What became of the art in this and other colonies when the Roman occupation ceased? It would appear to have departed with them, as the pavements which had been universal now became obsolete.

The art never went quite out in Italy, as the Popes were always caring for old pavements in way of removing and repairing, and at Venice the enamel mosaics of Murano kept the art alive. The modern revival we have to thank the French for, in the building of their Opera-house and the importation of Venetian workmen to carry out their designs. From France the art came here, and soon spread throughout Europe and America. For these pavements a good concrete foundation is absolutely requisite, and it ought to have time to dry out.

The method of sticking the tesserae on a paper cartoon, which is turned over and rolled or beaten into the coating of lime plaster, and afterwards rubbed down with soft grits, is familiar to you all.

When large slabs of color are introduced to get contrast it is requisite to insert a dummy slab of common stone while the beating of the tesserae is being done. The dummy slab is then broken up to get it out; this does not disturb the bedded tesserae. Wood will not do, as it swells with the wet. The Romans sometimes used tesserae of 1 inch, covering large areas with one color only — red or green porphyry or Giallo Antico. The effect is very imposing when enhanced with a flowing border of great width, as seen in the Baths of Caracalla. These 1-inch tesserae of marble in black-and-white in a variety of patterns are used for the street pavements and public squares of Lisbon, and answer well, as it is very hilly.

The sectile or slab pavement, arranged in different patterns of marble and porphyry, is very effective. There are examples in Rome on the Palatine, the Basilica of Julia, and the Pantheon. The simplest are the best. These are large slabs of rich marble, opened out with only a border slab of another color round, such as large slabs of Pavonazzetto, opened out with simple borders of yellow statuary. Also Pavonazzetto slabs, with St. Ambrozio Verona for border, are a success. Caryatian Cipollino so treated, with Verde Antico bands, makes a rich but retiring pavement. Pavements of marble squares, black-and-white, have been used in England since the sixteenth century, if not earlier; they are bright and clean, very durable and not costly. Red-and-white is also good, but I prefer the black not polished, which is a soft gray-black. These now have in a great measure superseded encaustic tiles.

The Opus Alexandrinum pavements which abound in Rome, and an example of which we have in Westminster Abbey, are geometrical patterns made with porphyries and marbles, the grand effect being produced by the "values," obtained by large circular slabs in contrast with delicate pattern-work. The large circles are section-slabs of Egyptian porphyry columns, the smaller circles are usually green porphyry of Laconia. The grand pavement under the centre dome of St. Mark's, Venice, which consists of twelve Caryatian slabs, making a square 30' x 26', with a rich mosaic border all round — you will all remember the Ruskin Street controversy as to its irregularity some years ago — is now levelled and done up; and not this alone, but most of the pavements in the church, and nearly all the grand ones which are the glory of Rome, have all been made "brand new" the last few years.

Other sorts of pavement, very effective, are the Florentine ones of the Baptistery and San Miniato; they are foliage and figure patterns, inlays of black-green Verde de Prato into white. The subject is always the white slab. The same treatment is applied to the wonderful pavement of Sienna Cathedral.

In designing marble pavements, use as few colors as possible, and put the work on a good foundation. The Italians and French during and since the Renaissance period have used marbles and porphyries in various ways for furniture and objects of vertu. Many of the Florentine and Milanese tables are real works of art and costly productions. They further introduced marble plaques into ebony cabinets, which are still sought after by collectors. The various French works in marble and ormolu, especially of the Empire period, are generally refined and good. Much of this class of work made by the Chinese and Japanese is good and suggestive.

From the time of the Early Egyptians down to the present the best materials obtainable have been employed for memorials to the dead. With the Egyptians no stone was too hard or too difficult to work. The Greeks chiefly used marble, and all who have had the pleasure of studying their monuments in the museum of Athens cannot help being impressed with their simplicity and beauty. Each one tells its own tale at a glance without attempting to decipher the short inscription.

Architecturally there is a great variety. The "stelæ" have mostly a flat pediment, to throw off the rain, with simple mouldings; the profile sections are flattened on the face; the sides invariably taper; the simpler have a relief panel of two or three figures, showing the farewell shaking of hands, with often the faithful dog looking on. Nothing can be more pathetic. The more important have sculptured figures in high relief, often two-thirds life-size. The sculpture comes boldly in front of the side pilasters. The whole thing gives the idea of the design and execution being by the same artist. I do not think they are "art and craft" productions.

We are much indebted to Dr. Murray, of the British Museum, for bringing out of the basement and dark stores an interesting collection of these monuments. He has placed them in a good light, in a separate room, at the end of the Parthenon Gallery. South Kensington has some good casts which might, for educational purposes, be added to.

The Greek sarcophagi were always refined, and are well worth study. The museums have usually obtained those that are richly detailed and filled with sculpture; but simple moulded ones, like the one at Gergenti, I think show better the Greeks' skill in subtlety of detail. The Romans at the first worked on Greek lines, but later got into a bold and unrefined type of work, especially in their sarcophagi and altar form of monument. But, like the Greeks, their small sarcophagi and urns for funeral ashes are of great variety, beautiful in form and, as marblework, exquisitely wrought. The British and Sir John Soane's Museums contain excellent collections.

The Byzantines made sarcophagi of enormous dimensions in "porphyry" and "Verde Antico." They were large enough to take the deceased in full robes; the designs were simple in detail to suit

the colored material. The Verona tombs of the Scaligers of later date are much on the same Etruscan lines.

How interesting most of the cathedrals and old churches of this country and the Continent are, owing to the Christian monuments they contain. Many of these buildings are real museums, the monuments giving the history, national, parochial and architectural. Unfortunately, owing to church restoration, we have lost many, while others have been skied where they cannot be seen. The want in many of our cold-looking church interiors is color. This could be largely helped by colored marble monuments. How cold most of the white monuments in St. Paul's Cathedral look, many of which are very costly, but how little they add in way of color. Contrast the sculptured ones with the Parthenon sculptures that we now know had color pattern on them, or the beautiful works of Donatello and others in Italy, where gold and delicate color are freely used. But we need not go abroad for color precedent, when all our grand monuments in Westminster Abbey, from Henry III down to James I, are full of color.

For modern work in sculpture, Rosso Antico, Giallo Antico, and black produce good work, especially for reliefs. The Romans and Florentines have left us numerous examples in most colored marbles.

There ought to be an effort made to get back memorials into our churches, for it is sad to know that a person who has been a constant worshipper in a church, has taken interest in parish affairs, and done good in various ways, should at his decease have no simple record placed to his memory in his church.

He is buried in some distant cemetery amongst thousands of others who have piled over them masses of marble or granite void of merit in design. The friends of the deceased feel bound to erect what they call an imposing monument or it will never be noticed. Now, would it not be better instead of placing a costly pile in the cemetery (where it is frequently not seen until the next interment) to erect over the grave a simple record in durable material and place on the church walls a small but artistic monument? I say small, because the church walls can only hold a certain number. If the memorial is to a man entitled to arms, then give him his arms and a short inscription; or it may be a small panel of sculpture, portrait or anything appropriate with color. By this means we enrich the church and record the deceased; but little can be done until the clergy can fully appreciate its importance, and if they give permission — not say to the artist it must be in this style or that, to suit the church or match some poor one already there.

Masonry jointing for built work is the proper method, but when marble has to be applied to iron-construction as covering of stanchions and girders, then special methods have to be adopted for the occasion, the things to guard against being expansion and vibration. In wall-surfacing with marble slabs, vertical angle-joints with a mitre quarter-of-an-inch-square check answer very well; and in strongly-marked marble mouldings going round a tablet, or even small opening, the ordinary picture-frame mitre is the best for effect.

In the fixing of slab work it is best to leave a small open space at the back, and use bronze clamps with a projecting notch to prevent the slabs being knocked inwards.

I find when a piece of marble one foot in length is heated up to 230 degrees Fahr. it expands about one-thirtieth of an inch, at 300 degrees Fahr. one-sixteenth, and up to red heat one-eighth, but in each case on cooling it only contracts half of the expansion.

For skill in chimneypiece-construction we must go back to early monastic times. These builders found out that a long lintel in one stone could not resist breaking when over their large wood-fires. To obviate this they jointed their "heads," using some form or other of wavy or stepped joint. And when marble is similarly exposed to a great heat this is the only safe method of jointing.

I have made two experiments with white marble, and find that a piece of marble 4 feet long expands, when nearly red hot, five-sixteenths of an inch, but on cooling it only goes back half of the expansion.

North Italy, in the provinces embracing the cities of Genoa, Florence, Venice and Milan, was the country for early chimneypieces, dating from 1400 to 1600. Venice, owing to its local building-material, being Istrian or Verona marbles, "was always a marble-working city"; in addition to these they brought from Greece, along with their colored columns, blocks of white. Istrian stone or marble, which is hard and receives the most delicate chisellings, was the favorite material.

The designs, which are Renaissance, mostly consisted of rectangular projecting canopies with architrave, frieze, and cornice, supported by corbels well built into the wall, under which are pilasters or ornamental columns with caps and bases. Most of the chimneypieces are beautiful in design and well executed.

The "antique mongers" of Florence and Venice have grabbed them whenever they had a chance, and they copy and make "new old" ones to the fullest extent by staining and smoking over wood-shaving fires until it will almost defy any expert to say if it is new or old. When buying these chimney-pieces purchase them on their merit and not as antiquities; then you are safe.

Belgium, which is a marble country, has produced many good canopied chimneypieces. The most famous is the grand one in black marble at Bruges. France is perhaps the richest country for good chimneypieces in every style and date. They are found in every old palace, château and castle; there is a series of simple ones

in the rooms of the Louvre in Paris, one in Egyptian porphyry, another in lapis lazuli, another Rosso Antico, and so on. These have ormolu mouldings.

The refined Adam's chimneypieces take a lot of beating, either in design, execution or economy of good material. The original drawings of many of these are in the "Soane" Museum. A bold "ovolo" moulding in colored marble all round the fireplace opening is always safe.

You will see in the room a number of specimens, others showing methods of jointing and color combinations. In conclusion, I will say, use as few colors as possible in your work, and the nearer you keep to one the better.

CRAWFORD'S DOORS FOR THE UNITED STATES CAPITOL.

CURIOUS tourists visiting the Capitol (the unappreciative Washingtonians never go there unless they are obliged to) are directed by their guide-books to note the imposing decoration of the tympanum of the pediment above the portico of the Senate extension. They are told that the group of figures designed and modelled by Thomas Crawford represents "The Progress of Civilization in the United States," and they are also told (casually) that it cost \$49,950. They are appreciative, and gaze with admiration and then naturally betake themselves to the southern portico, where a disappointment awaits them, for there the pediment boasts nothing more than a blank wall-space. If they pursue their investigations further they will be surprised to find that, while the main entrance on the Senate side is adorned with Crawford's magnificent bronze doors, decorated in *alto relievo* with incidents in Washington's life, the equally prominent entrance on the House extension still remains without any embellishment whatever. This difference in richness of ornamentation between the two wings is not alone confined to the exterior. The Senate wing possesses by far the greater number of paintings and busts, many of which were added within recent years, while the luxury of appointments and furnishings is much more pronounced than that of the House.

It is said that designs and a model for a bas-relief for the pediment, now blank, were furnished by one William Barber, a Virginia sculptor, but the mists of oblivion seem to have swallowed both William Barber and his design. He had planned to commemorate the discovery of America, which would have served as an excellent supplement to the group already executed by Crawford, but were the designs still in existence it is hardly likely they would be adhered to to-day.

However, there is a model of bronze doors for the House entrance. Crawford's order contemplated two sets of doors, but he had at the time of his death, in 1857, though both his designs were complete, furnished only one model — that for the doors of the northeastern portico, which were duly cast and placed in position in 1868. In the meantime, however, Crawford's designs for the other doors had been carried out in plaster by his pupil, W. H. Reinhart (who received \$9,000 for this work), and have now been buried in some dusty corner of the crypt since the Civil War, their casting still protracted from session to session at the will of an extremely dilatory House. It seems the greater pity that they cannot be cast and swung, as both sets of doors, illustrating, as they do, scenes from the life of Washington, were conceived as an entirety, and neither, consequently, is complete without the other.

Perhaps it is unfortunate that all appropriation bills for decorating purposes have to originate in the house that intends the decoration, for in this matter, at least, the two houses of Congress are like two different families. Though, of course, it is easier to pass a matter of no great moment through the smaller house, the Senate is characteristically the more liberal. All offices which pertain especially to the two branches of the legislative body are more liberally salaried by the Senate, as, for instance, that of the chief engineer, which on the Senate side receives \$21,000, but on the House side only \$17,000, though the latter office requires by far the greater amount of work. The Senators being older men, generally richer than their colleagues of the House, and usually remaining so long in their positions as to feel a home interest in the Capitol, are naturally more solicitous of their personal comfort, as the more elegant appointments of the Senate wing testify. The Senate orders new decoration, apparently, whenever the spirit moves it, and, its members being personally accountable to no one concerning expenditure, the decoration is usually a sumptuous affair.

The House of Representatives, on the contrary, has always curbed any unruly yearnings toward elegance with the softly whispered word "economy." Perhaps each Representative tries to avoid the awkwardness of explaining to constituents whose æsthetic tastes have possibly not been developed large appropriations for statuary or mural painting. If any bill proposing to beautify the Capitol does happen to struggle to the floor, it is almost always sent back to the shelter of its committee-room by some member with the idea of another two years firmly fixed in his mind. So, as it is, the southern wing of the Capitol still remains somewhat bare and comfortless. — *N. Y. Tribune.*



CENTRAL NEW YORK SOCIETY OF ARCHITECTS.

AT the annual meeting of this Society held at Ithaca, N. Y., Wednesday, December 7, a revision of the Constitution and By-laws was made and adopted. The name of the Society was changed, and is henceforth to be known as the *Central New York Chapter, American Institute of Architects*.

The changes made in the Constitution and By-laws were such as to make them conform to the present Constitution and By-laws of the American Institute of Architects.

The following officers were elected to serve until the next annual meeting: *President*, J. H. Pierce, Elmira, N. Y.; *Vice-President*, Prof. A. B. Trowbridge, Cornell University, Ithaca, N. Y.; *Secretary*, Arthur N. Gibb, Ithaca, N. Y.; *Treasury*, Prof. C. A. Martin, Cornell University, Ithaca, N. Y.; *Member of Executive Committee*, J. Foster Warner, Rochester, N. Y.

A committee was appointed to confer with the Buffalo Chapter to consider the question of holding the next annual meeting of the two chapters together in Buffalo.

After the business sessions the Chapter was entertained by Messrs. Green and Cary of Buffalo, who with the aid of plans and sketches gave a description of the work being done at Buffalo for the Pan-American Exposition.

Professor Martin also gave an exhibition of lantern slides illustrating a wheeling tour abroad.

A dinner in the evening, an informal exhibition of photographs of recent work done by members and an exchange of amusingly decorated menus brought the meeting to a close.

ARTHUR N. GIBB, *Secretary*.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

STABLE AND ENTRANCE GATE: ESTATE OF GIRAUD FOSTER, ESQ., LENOX, MASS. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

HOUSE OF ANDREW CARNEGIE, ESQ., NINETY-FIRST ST. AND FIFTH AVE., NEW YORK, N. Y. MESSRS. BABB, COOK & WIL-LARD, ARCHITECTS, NEW YORK, N. Y.: TWO PLATES.

A COMPETITIVE DESIGN FOR THE HOUSE OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, W. 57TH ST., NEW YORK, N. Y. MESSRS. W. B. BIGELOW AND FRANK E. WALLIS, ARCHITECTS, NEW YORK, N. Y.

[The following named illustration may be found by reference to our advertising pages.]

EQUESTRIAN STATUES OF JOAN OF ARC.

[Additional Illustrations in the International Edition.]

THE SOUTH FRONT: HOUSE OF GIRAUD FOSTER, ESQ., LENOX, MASS. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

THE GALATEA FOUNTAIN ON THE EUGENE-PLATEAU, STUTTGART, GERMANY.

[Gelatine Print.]

THIS fine work of art was unveiled and presented to the people of Stuttgart, in April, 1890. It stands upon the upper edge of a grassy slope, about fifty feet high by sixty-five wide. The water, which, after falling into the upper basin, escapes through a lion's jaws from the base of the fountain, leaps downhill over the many steps of the slope, forming a graceful cascade, into a basin at the foot of the slope, whence it reaches the sewer. The fountain is the work of Herr Otto Rieth, architect and sculptor, an artist having already won wide fame, notwithstanding his youthfulness. His wealth of imagination has been attested by three volumes of "*Architektonische Skizzen*," published in rapid succession, which have astonished the profession. As a sculptor, Herr Rieth is strictly self-taught, with what effect may be seen from the statuary of the Stuttgart fountain, which is the first-fruit of his labors. The design for

the Galatea statue and the landscape-architecture as well was obtained in 1884, by a general competition, resulting in awarding the work of Herr Rieth a third prize. Queen Olga of Württemberg, however, was so captivated with the beauties of his composition that she commanded its selection for execution. The success of the work subsequently showed her confidence in the artist's ability to have been fully justified. The principal statue dominating the composition is the bronze figure of Galatea, the daughter of Nereus, surrounded by cupids. The nudity of this lovely figure gave rise, nine years ago, in the Suabian capital to a heated discussion for and against the nude in art, that in degree of bitterness on the side of the would-be moralists was not, by far, equalled by the similar discussions evoked in Boston by Mr. MacMonnies's "*Bacchante*" and those quite recently called forth in Chicago by Mr. Lorado Taft's "*Nymphs*." The embitterment of the opponents of "Nudity in Art" became so intense that their organs were not ashamed to publicly invite rude vandalism to their aid. Fortunately, the police proved too watchful for these evil designs to be carried out. It redounds to the late King Karl's lasting credit that he replied to the dastardly attacks upon the artist and his admirers by honoring Herr Rieth with the presentation of the "Gold Medal" for Art.

Considerable difficulties were encountered in constructing the foundations for the monument. The hill being composed chiefly of the debris of a former quarry, it became necessary to go down 40 feet to rock-bottom, and erect four big pillars of cement-concrete. Upon the tops of these was placed a huge block of concrete, 5 feet thick, which formed the base of the monument. The pedestal, in graceful Rococo forms, consists of the beautiful, greenish-white sandstone quarried at Stuttgart, the two sphinxes in the rear, and the copings of the balustrades, etc., of Savonière limestone. The statuary, the basins, and the orifices, are of bronze. The height of the statue of Galatea measures 11½ feet, or 38 feet, including the pedestal. The total cost of the fountain amounted to only 85,000 marks (equal to \$20,400), which sum was defrayed by the Stuttgart Society for the Advancement of Art, assisted by Her Majesty Queen Olga, of Württemberg, and the city of Stuttgart.

THE TOWN-HALL, ROLAND PILLAR AND ST. MARY'S, STENDAL, PRUSSIAN SAXONY.

[Gelatine Print.]

STENDAL, thirty-six miles north by east from Magdeburg, with a present population of 18,000, was once the capital of the "Altmark." The traveller who approaches this old town from afar is struck with the large number of stately towers and steeples that greet his eye. They speak to him of the important rôle Stendal once played in the history of the "Old Mark" (German for "frontier"). While the neighboring Tangermünde was conspicuous as the residential city of the Margraves, and at times even of the German Emperor, Stendal, with its granite walls and gate-towers, represented a strong bulwark against the savage onslaught of the Slavish frontier tribes, and with its churches and monasteries, a protecting agency to civilization in an age when the Church was the militant and powerful ally of the Emperor in the sanguinary struggle waged against barbarism and crude paganism. The highest pair of church-towers, that of St. Mary's, rises from the very centre of the town, having at its feet the town-hall, which encloses two sides of the Market Square, as seen in our plate, with the tall and clumsy Roland pillar (erected 1525) standing nearby. The town-hall did not always cut off the view from the square upon the Cathedral-front. Originally it consisted only of the taller wing, erected in the thirteenth century in Gothic forms, and terminating at each end in double gables in the familiar forms of the North-German brick-architecture. The lower wing, starting at a right angle from the earlier portion, was added in the fifteenth century. Hence, it is clad in the garb of the German Renaissance, at least outwardly, while the Council-chamber, which occupies the entire upper floor, contains some interesting vaulting and fine wood-carving in late Gothic, completed in 1462. Only one of the two narrow sides of the Chamber has preserved its wainscoting, which extends up to a height of 16½ feet for a width of 26 feet. These carvings are considered the most valuable specimens existing of the woodcarver's art in the "Old Mark" country.

PROPOSED DEPOSITORY FOR HARROD'S STORES, LIMITED, BARNES, SURREY, ENG. MR. W. G. HUNT, ARCHITECT.

THE QUEEN-MOTHER'S SITTING-ROOM, AMSTERDAM, HOLLAND.

RESIDENCE, PLYMYARD PARK, BROMBOROUGH, CHESHIRE, ENG. MESSRS. WILSON & TALBOT, ARCHITECTS.

VANDYCK'S BURIAL-PLACE. — *Apropos* of the Vandyck celebrations, the Archdeacon of London writes a brief but interesting letter recalling the fact that the burial-place of the great artist was old St. Paul's Cathedral. This, adds Dr. Sinclair, was the origin of the burial of presidents of the Royal Academy and other great Academicians in Artists' Corner in the present building. Any monument to Vandyck perished in the fire of 1666, and as there is no tablet or record of the great painter in the modern cathedral, the fact of his interment is unknown to the crowds who daily throng St. Paul's. — *London Globe*.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

"AN AWARD CRITICIZED."

COLUMBIA UNIVERSITY, NEW YORK, N. Y., December 6, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — Having had my attention called to two communications from Mr. A. B. Jennings in recent issues of the *Architect* relative to waste of labor in a recent competition, and having noted also your comments thereon, I beg to say a few words by way both of explanation and reply. The quotation from the expert adviser's report in Mr. Jennings's first letter (issue of November 11) serves to identify the competition referred to as one which I recently had the honor to judge, and in my report upon which I used the language quoted.

Mr. Jennings is certainly correct in his protest against the requirement of useless drawings and excessive labor in competitions. This is an evil against which I have battled as earnestly as any one, and I am sure all architects will applaud and echo every protest against this abuse. But Mr. Jennings is mistaken in citing this particular competition as a case in point. Although I had no hand in drawing up its requirements, they were in the main modelled after those of an earlier competition in which I was consulted, and on examining the designs for the award I found that not one of the eight drawings could have been omitted from the requirements. The passage quoted from my report refers only to the preliminary examination, the object of which was to eliminate hopeless and vicious designs, and thus to reduce the number to be more carefully compared for the final award. As the latter part of my report, which was not quoted in your correspondent's letter, plainly shows, eleven out of the forty-four designs were thus retained for further examination, and in comparing them I was obliged successively to examine every one of the five floor-plans submitted, since some excelled in the arrangement of one floor and some in another, and all these various merits and defects had to be weighed and balanced with great care to make sure of an equitable result. The submission of five floor-plans was made necessary by the extremely complex nature of the building. While the plans of the first, second and third floors sufficed to show the general merit and quality of each design and to throw out thirty-three out of the forty-four, the remainder required that detailed comparison which could not be complete without the study of the basement and upper floors, both as to constructive propriety and convenience and artistic distribution. The same was true of the front elevation and of the perspective.

It should also be remembered that it is not always possible to foresee just what drawings may prove unnecessary in the final judgment. Very often the perspective plays no part in this award, and yet it often enough serves either to turn the scale for, or against, a design, or to confirm and fortify an impression otherwise received, to make it quite unsafe, in most cases, to omit it from the requirements. Sometimes there is so obvious and pronounced a superiority in one design over the rest that the award can almost be made on a casual inspection of a single plan and elevation; yet such a result can never be foreseen; and as it quite as often happens that there is a nearly even balance between two or three designs, requiring a very nice weighing of details, it would be obviously dangerous to limit the requirements in expectation of the first result.

Your comments, made in ignorance of the actual circumstances, were nevertheless so just, and came so near the truth of the particular case — in substance, not detail — that your readers will, I think, be interested in this confirmatory evidence. Thanking you for the opportunity to set myself right on this important matter with those competitors who may have felt as Mr. Jennings did, that the work required in this (Scranton) competition was excessive and some, at least, of the drawings needless, I remain,

Yours respectfully, A. D. F. HAMLIN.



LONDON'S CATHOLIC CATHEDRAL. — Now that the Roman Catholic Cathedral which is in course of erection at Westminster has been carried roof high, the general body of the structure and the character and magnitude of the building are discernible from the streets surrounding the site. The striking outlines of the huge Byzantine building are consequently attracting much notice, and when the cathedral is completed it will become one of the sights of the metropolis. Completion, in the sense which will imply the fulfilment of the aspirations of Cardinal Vaughan and those who share with him the burden of this enormous undertaking, must necessarily be in the somewhat remote future; but

it is anticipated that the building itself, apart from the elaborate ornamentation that is contemplated, will be finished a year hence, so that it may be opened for worship on September 29, 1900, the golden jubilee of the Roman Catholic Hierarchy in England. The roofing has been begun, and will probably be completed by the end of the year; some of the minarets and domes are almost finished, and the lofty tower, which will form a striking feature of the building, has been carried to about half the intended height. The nave is the largest in England, having an area of 14,040 square feet, as compared with the 13,244 square feet of York Minster. Among the columns by which this area will be divided from some of the chapels will be a number formed of exquisite Grecian marble recently brought over from Thessaly, where, among other spoils of war, they were seized by the Turks when they overran that province. — *Birmingham Post*.

VANDALISM IN BERLIN. — A shameful act of vandalism was perpetrated in Berlin recently. Four of the beautiful statues on the right side of the Sieges-allee, presented by the Emperor, have been mutilated. In the group representing Albrecht the Bear, the shepherd's crook, which the Elector carried in his right hand, is completely broken off. In the group of Otto I, Prince Pribislaw has had his nose knocked off and his face cut; the Abbot Sibold has had all the fingers of his right hand, his shepherd's crook, and his nose smashed. In the group of Otto II, Henry of Antwerp has had his goose-quill and Johann Hans von Putzitz his parchment roll broken off. Nor has the group of Albrecht II escaped damage, Hermann von Salz having had his nose broken off, his sword-hilt and his parchment roll destroyed; while Eike von Repkow has lost his nose and his goose-quill. Not content with this, the iconoclasts have also damaged the marble seats to the rear of the statues. Each of these seats is supported by an allegorical eagle with a crown on its head. The crowns in the group of Otto I and Albrecht II have, in addition, a cross on the top, and these crosses have been knocked away. The monuments in the Sieges-allee are always guarded by the police, one policeman being told off to every six monuments. This, however, has always been considered by the general public to be quite insufficient, and the present act of vandalism is certainly due to the absence of adequate precautions. It would be very difficult to restore the mutilated groups. Professor Begas is of the opinion that, even if they can be restored, the traces of this work can never be completely obliterated, since even if the broken parts are renewed, they will scarcely have the original plastic effect, and will not be weatherproof. The damaged statues will, therefore, have to be entirely replaced. The barbarous mutilation was discovered early the next morning by the police, who found the pieces of broken marble scattered round the statues; but by that time, of course, the perpetrators of the crime had disappeared. The result of the investigations made by the detective-police shows that the act was committed by means of a blunt instrument, which has not yet been found. The public are greatly irritated at the affair, and the comments one hears, especially from foreign residents, are not very flattering to Berlin. A sum of 500 marks has been offered as a reward for the detection of the miscreants. — *Berlin Correspondence London Standard*, October 24.

LIQUID-AIR AS A BLASTING AGENT. — The *St James's Gazette* quotes from a foreign source an account of a series of tests of liquid-air made a few weeks ago by the Vienna Crystal Ice Company in the presence of representatives of the Austrian Technical Military Committee. The fluid was obtained from Linde's works in Munich, and conveyed to Vienna in open flasks, having the Dewar vacuum-jacket to check evaporation. When it was despatched the mixture contained 75 per cent of oxygen; but seventy-two hours later, when the stuff was used, enough nitrogen had evaporated to make the percentage of oxygen 85. Cartridges were made of liquid-air, mineral oil (petroleum), and Kieselguhr. The oil seems to have taken the place of charcoal in gunpowder in supplying an inflammable material which would develop a large quantity of gas. The liquid-air was almost pure oxygen, and tended to promote combustion. The Kieselguhr served the same purpose that it does in dynamite. It is a silicious earth used as an absorbent to hold the nitro-glycerine. The cartridges are spoken of technically as "oxylignite." They were prepared in two ways. First, the Kieselguhr and oil were mixed in a basin, and the liquid-air was added gradually. The resulting paste was ladled into the cartridge-case, which was coated with asbestos, probably to check the absorption of heat from surrounding substances. The second method of preparation was to charge the cartridge with Kieselguhr and oil, and add the liquid-air later. The second set of cartridges were encased in sheet-lead. Owing to the intense cold the men did not care to handle the cartridges vigorously, and there was difficulty in attaching detonators and fuses. In the meantime much of the oxygen evaporated, especially from the cartridges having lead cases. These latter proved weaker than the first set. One of them missed fire altogether. The cartridges were inserted in holes 30 inches deep in the rock when fired. Artillery General Engineer Hess made the following comment on the tests: "The preparation of the cartridges is wasteful and dangerous to the eyes, and, owing to the rapid evaporation, it is further impossible to guarantee the strength of the cartridge, even in the roughest way. Kieselguhr and oil seem to be suitable absorbents, and oxylignite an effective blasting agent, though comparative tests have not been made yet. The cartridges must be used within, say, fifteen minutes of their preparation. There is no danger, hence, from missing fire. But, on the other hand, it will be difficult to fire many cartridges simultaneously, and, strictly speaking, the cartridges should be made on the spot, and be in a very hard condition. That would scarcely be possible below ground; the spurting liquid might break the glasses of the hot safety lamps, and it remains to be investigated whether the large volumes of oxygen might not lead to spontaneous ignition of marsh-gas or coal-dust. The evaporating oxygen would, on the other hand, improve the air, and the blasting would not contaminate it."

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SUMMARY:—

Tile, Grate and Mantel Association of New York sued for ruining a Tile-layer.—Mr. J. P. Putnam's Advocacy of Coöperative Building by Mechanics.—The Attitude of the Labor Unions toward any such Endeavor.—Boston as an Early Seaport.—Its Decline owing to the Present Navigation Laws.—Its Reincarnation through the Agency of Western Railroads.—Domestic Architecture in Belgium.—New Bridge between Boston and Cambridge.	97
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A CASE of great importance is now before the New York Supreme Court. One Kiernan, a contracting tile-layer, sues the Tile, Grate and Mantel Association of New York for twenty-five thousand dollars' damages for having destroyed his business, and ruined him, by refusing to sell him materials, as he was not a member of the Association, or of some other body in league with the Association. The constitution and by-laws of the Tile, Grate and Mantel Association were put in as evidence, and clearly showed that any member who sold materials to an outsider was liable to expulsion. Kiernan proved that he was doing a thriving business until the Association refused to sell him materials and that after that time he had done almost no work; so that the connection between the action of the Association and his ruin was established, and the question, whether the Association, or any similar body, was entitled to take such action against any person, came definitely before the Court. It is well known that the dealers in plumbing goods have long pursued a similar policy in regard to the Plumbers' Association, in New York and elsewhere, and, more recently, the American Tin-Plate Association has combined with the steel-plate manufacturers in exactly the same way, to ruin tin-plate makers outside its own ranks; so that the decision in the Kiernan case will bring relief or despair to a great number of victims of the Trusts in New York, and probably elsewhere, since New York decisions have great importance as precedents all over the country.

MR. J. PICKERING PUTNAM, who is well known in the profession as a person with interesting ideas on many subjects, recently read a paper before the Twentieth Century Club, in Boston, describing a scheme for erecting buildings by coöperative effort on the part of skilled mechanics. According to his plan, foremen should be permanently employed, under whom men temporarily out of work should be permitted to labor on buildings to be owned by the persons erecting them. Each man working in this way would be paid by a check, representing the number of hours he had spent on the enterprise, and this check would entitle him to a corresponding share in it. At first, he would have to wait until the building was completed and sold before he could realize cash for his check, unless, indeed, he could find some one to discount it; but, as such coöperative enterprises multiplied, they would naturally receive from their sales an income, which could be used for cashing the labor checks on presentation. Mr. Putnam, after describing this ingenious and interesting scheme, said that he looked to the trades-unions as the most efficient supporters of such a movement, and thought that it

would be desirable to have the privilege of working in this way limited to members of the unions.

WHILE we have long thought that the construction of buildings offered a very promising field for coöperative effort, we cannot say that we anticipate much from the trades-unions in the way of the development of Mr. Putnam's system. At present the tendency of the unions is unquestionably to discourage independence and individual effort, and to cultivate in workingmen the idea that they are somehow benefited by making their working days as short, and the amount to be accomplished in them as small, as the public will endure. Now, no one ever yet heard of an undertaking, either coöperative or otherwise, which was successfully carried through by people who gave to it only a feeble attention for a third part of their time, and it is hardly credible that the earnest thought, the energy and industry, which alone make success in business possible, should suddenly find favor among organizations which claim, as their cardinal principle, that each member should be compelled to devote half of his waking hours to "recreation," and that, in the other half, he should be required, by severe penalties, to do only about half as much work as can easily be accomplished by any man of energy and ambition. While we think, therefore, with Mr. Putnam, that coöperation in industrial enterprises will furnish the solution of many of the most threatening social problems of the present day, we are so far from looking to the trades-unions for guidance in such a direction that we expect rather to see the first coöperative associations of building workmen guarded by troops against the assaults of desperate, but dying, trades-unionism. We are not fond of making predictions, but it must some time occur to the younger and more independent sort of workmen that there would be great profit to a small body of skilled mechanics, who could get together a little capital, in carrying out building operations with long hours, unrestricted activity, and an intelligence and mutual helpfulness stimulated by the knowledge that a display of these qualities would count in dollars and cents, in competition with eight-hour days, limited output of work, mutual jealousy, and the general reluctance and discord which are so carefully cultivated by the unions. Architects have a good opportunity for watching workmen, and they would probably agree that if all the labor in building operations could be performed by men as active and intelligent as the best of those they know, working as many hours in the day as the architects themselves work, and with a mutual understanding which would preclude mistakes and misfits, it could, as a rule, be completed in half the time ordinarily devoted to it. In most building operations, the labor is at least half of the total cost, and a saving of half the time spent would mean, not only a profit of twenty-five per cent on the whole cost of the building, but an additional profit, often nearly as large, in the saving of rents, interest and insurance. Supposing twenty men, of all trades, to carry out in this way a hundred thousand dollars' worth of building in a year, which is by no means an extravagant estimate, each should have, at the end of the year, besides the regular wages, a dividend of twelve hundred and fifty dollars, and possibly much more. It is doubtful whether the income of the average union carpenter or mason, taking one year with another, is, in our large cities, more than six or seven hundred dollars a year, and, as the coöperative companies could underbid any of the contractors who employed union men, and their members would therefore be sure of employment, the new system, if carried out with reasonable honesty and intelligence, should offer to good men an income two or three times as great as anything they could hope for under union rules. As we have already said, the introduction of this method of selling skilled labor would probably be resisted to the utmost by the unions, and by all the social philosophers who delight to separate workingmen from the rest of mankind; but it has been successfully tried in other industries, and we believe that it will, sooner or later, be tried in the building industry, for which it offers peculiar advantages.

IT has long been a question of interest whether Boston would ever become, or could be made, a great seaport, perhaps rivalling New York in its foreign commerce. Two hundred years ago, although the foreign trade of the American colonies was still limited, Boston was the most important ship-building

seaport in the world. Legislation, to which commercial interests are peculiarly sensitive, made Boston ship-building unprofitable, and the port declined. After the Revolution, a few intelligent and determined ship-owners in Salem succeeded in establishing a foreign connection for that port, and for many years the commerce of Salem exceeded that of Boston. Fifty or sixty years ago, Boston, which had become an important city, and the centre of a large manufacturing community, began to draw from Salem its foreign trade also, and many of the Salem merchants, whose ships had brought to their doors goods from India, China and Southern Africa, found it advisable to remove their counting-houses to Boston, and they followed, soon afterwards, with their families, establishing a little circle which even now, in the second or third generation from the original emigrants, prides itself on its Salem connection.

THE Civil War came, and with it the navigation laws which drove all American shipping from the ocean; and grass grew on the silent wharves which had recently been crowded with the swiftest, the best built and the best manned vessels that have ever sailed the sea, while the navigators who had carried the American flag to every port in the world, and who had too much professional pride to stoop to steering coasters from light-house to light-house along the New England shore, retired to their native Cape Cod villages, and devoted their time to raising hens and reading the newspapers. Some of the best wharf property was sold for trifling sums, and utilized for storage, or other unnaautical purposes; while ferries, excursion steamers and coastwise lines occupied the rest. The Cunard Steamship Company, to which Boston owes a debt of gratitude, established and maintained, often, probably, at a loss, a line of steamships to Liverpool, but it was for years difficult to dispose of cargoes from England, and still more so to get return cargoes, and for a time, if we are not mistaken, even the Cunard service was discontinued, and no vessels bound to foreign ports left the harbor of Boston except an occasional "tramp" steamer, or a sailing-ship chartered by some patriotic Bostonian out of sentiment, rather than with hope of profit. It is said, however, that every steamship line which has ever been established to carry goods between England and America has at first selected Boston for its port on the American side, on account of its obvious geographical advantages, in being half a day's sail nearer Europe than New York, and in having railway connection directly from the wharves to every part of the continent, as well as on account of the straight, deep channel and sheltered harbor which the charts showed that it possessed; and, even when experience showed that Boston afforded only the most antiquated and ridiculous facilities for landing cargo, and that nothing was known there of the system by which, in more enterprising seaports, great houses receive whole cargoes from steamships, distribute them, and supply return cargoes, the owners of the new lines reluctantly changed their destination to New York. A few years ago, apparently through the provision, by some rich men of discernment, of facilities for loading grain directly from the cars into vessels, a sudden impetus was given to Boston's foreign commerce, and the Cunard fleet was increased, while two or three new lines were established. With these and the tramp-steamers, the harbor, on sailing days, began to assume a more cheerful appearance, and ten ocean-steamers are said sometimes to leave Boston in a day.

NOW, further changes are said to be impending, and Boston may some time be surprised to find itself as famous for its foreign shipping which it entertains as it once was for its fleet of American clippers. The passing of the railway lines terminating in Boston into the hands of the owners of their Western connections has made it easy to arrange for through shipments of freight and passengers to and from the wharves to any part of North America, and this advantage, combined with a depth of water in the harbor which even Liverpool does not possess, seems to have led the railway managers to devise a promising plan for increasing the value of their newly acquired property by developing still more the foreign commerce of the city. A large extent of deep-water frontage, directly connected with the tracks of the Boston & Albany and other railroads, has been secured, and is ready to be put to use at any time; and the attempt, once made by the Cunard Company, but abandoned in consequence of the loss of its swiftest steamer, to attract passenger travel to the Boston route, is likely to be repeated, the Cunard Company having, it is said, two of the finest and fastest steamships in the world under con-

struction to be put in service on the Boston line next summer, while some comfortable, though not very swift, passenger-steamers have been put on two of the other Boston lines, and have proved so popular and profitable that others are likely to be added. As the distance from Chicago to Boston, by the great Vanderbilt railway lines, is only about fifty miles longer than from Chicago to New York, and as Boston is one hundred and eighty miles nearer than New York to Liverpool or Queenstown, it is certainly desirable for a traveller from the West, if he can find as good and swift steamers at Boston as at New York, to embark at the former city for his ocean trip; and, as all the railroads entering Boston can easily run passenger-cars alongside the steamers, as is done at Liverpool, Cherbourg and other foreign ports, the expense and annoyance of transporting passengers and baggage across the city, which forms an important item in the experience of a family sailing from New York, can be avoided. In fact, this can be done better, perhaps, in Boston than at any port in the world, for at Liverpool and Cherbourg it is generally necessary to transfer passengers and their baggage to the landing by tenders, while the water in Boston harbor is so deep that the largest vessels go directly to their wharves at any tide. Any person who has conducted a tired family and a pile of trunks from the railway-station in New York to a hotel, and has risen at day-break the next morning to get them all moved a second time from the hotel to the steamer, can appreciate the luxury of being conveyed by the railway to the wharf, and of seeing their trunks taken from the baggage-car directly on board the steamer, leaving the members of the family with nothing to do but enjoy the change; and when Boston can offer this luxury, in connection with a service of swift and first-class steamships, she may be sure of preference in passenger business.

LE MONDE MODERNE for December has an interesting article on "Domestic Architecture in Belgium," which might furnish hints to many of our architects. All the cities of Belgium resemble our own Philadelphia in being filled with single dwellings, rather than tenement-houses. The Belgian is passionately devoted to his family and his home. He hates, like Dante, to climb other people's stairs, and his ideal, from the time that he is old enough to have any ideals, is to have a pleasant little house all to himself. As property is quite evenly distributed in Belgium, few people being either very rich or very poor, most fathers of families are able either to own or to rent such houses, and they are often made very attractive. In Ghent, the "city of Flora," as the Belgians call it, many of the houses have little conservatories attached to them, in which bloom the Indian azaleas and double fuchsias for which Ghent is famous. In Brussels, where land is more valuable than in the provincial towns, it was thought, some years ago, that considerations of economy and convenience would attract tenants to well-planned apartment-houses, and several were built near the centre of the city, and fitted with elevators and other modern appliances; but the native Belgians would have nothing to do with them, and such tenants as have been found for them have nearly all been foreigners. This experiment seems to have decided the future of the city, and since then new suburbs have been laid out in all directions, and have filled up rapidly with houses, the inhabitants of which reach their business in the old part of the town by innumerable tram-cars and omnibuses. By a fortunate concession to the views of instructed persons, the new suburban streets are generally laid out with great taste, curved lines alternating with straight ones, and very long streets being avoided; and the architects have supplemented this favorable disposition by a remarkable display of varied and attractive domestic work. Few of the houses in these new suburbs are very costly, and, owing to the value of the land, they are built in blocks, with narrow fronts, generally of red brick, but this modest material is managed with great skill, and it would be hard to find prettier city fronts, of small size, than some which *Le Monde Moderne* illustrates.

THE new bridge which is to connect Boston with Cambridge has been designed with a view to artistic effect, and, if the present plans are carried out, as is probable, the structure will be not only interesting, but creditable to both cities. According to the newspaper descriptions, the bridge is to be adorned with two light-houses near the middle, and two towers at the ends. Fortunately, the total length is considerable, so that this rather liberal allowance of features ought not to give a crowded look; and the light-houses will be of use in showing the channel for inward and outward bound vessels.

CROYDON PALACE.



Poppy-head in Chapel,
with Arms of Laud
and Canterbury.

new Croydon is on the higher ground beyond it. Eastward are the Addington Hills, and at the village is the modern residence of the archbishop of Canterbury; in the beautiful park is the little church, where two of the primates lie buried; in the churchyard three more, Sumner, Langley and Tait, and "Catherine and Crawford Tait—mother and son"—as the simple gravestone tells us.

Charcoal-burning was the ancient industry of the place, "the Colliers of Croydon" figuring in several old English plays.

As the primates were settled here at the conquest, there must have been a manor-house; but no trace of it exists. Kilwardly was the first of whose residence there is any record; after his time the references are many to the subject in such writings as remain, but especially in the Archbishop Registers at Lambeth. Courtenay received the pall in the Great Hall on the 14th of May, 1382; this ornament, a strip of ermine worn over the shoulders, still figures in the arms of the See of Canterbury, where it looks like a capital Y. Arundel is supposed to have built the Withdrawing Room; Cranmer is known to have repaired the building. In fact, Catholic and Protestant associations cluster equally about it, for Ridley and Latimer officiated in the Chapel, while John Frith, the martyr, afterwards burned at the stake in Smithfield, was brought here on his way to trial and rested for a night in the porter's lodge.

A beautiful and interesting figure in its history is the captive King of Scotland, James I: taken prisoner in his childhood, he passed many years in England, and a considerable portion of them in this Palace, where he was entrusted to the guardianship of Archbishop Arundel. It was at Croydon he signed "a deed of general confirmation" to Sir William Douglas of Drumlanrig.

Queen Elizabeth was often here on visits to Archbishops Matthew Parker and Whitgift. The former had been chaplain to her mother, Anne Boleyn, and will always be remembered for "the Bishops' Bible."

The great Perpendicular Church, almost destroyed by fire years ago and rebuilt under the superintendence of Sir George Gilbert Scott, contains the tombs of several archbishops, the finest, Jacobean in style, being that of Whitgift; a sarcophagus with a recumbent effigy of the primate in his robes, with hands joined in prayer. It is of painted marble—a device of which our ancestors were exceedingly fond, as almost every one of our old churches bears witness—the face and hands, exquisitely modelled, are of actual flesh color, the latter very delicate; the shields of the Sees of Canterbury, Worcester and Lincoln, and of three colleges of Cambridge, Trinity, Pembroke and Peterhouse, are introduced, blazoned in their respective colors.

In accordance with old-fashioned ideas, the site chosen for the Archbishopal Palace is in the lowest depression that can be found for some miles around; a spot where the Wandle formed several streams and one or two wide sheets of water, one of them known as "My Lord's Pond." All these have now disappeared; the little stream flows in a conduit underground; the land has been thoroughly drained, and rows of small new villas in yellow brick have approached

it in lines like an army. Yet it is still a pleasant spot, quiet, overshadowed by the vast pile of the Parish Church, and leafy with many trees. The Great Hall, 56' x 38', is a noble structure of stone, with elaborate Perpendicular openwork roof; the chapel still retains the gallery where Elizabeth sat; there is a withdrawing-room and a music-gallery, besides some curious little Gothic courts and offices. The Old World air and flavor of the place are enhanced by the undoubtedly authentic entrance to a vaulted passage leading underground to Beddington, a mile-and-a-half away. Local tradition has it that Queen Elizabeth told Sir Walter Raleigh he might kiss her, if he could follow her to Beddington by a silken clue through this passage, which "the gentleman with the bold face" succeeded in doing—but all details of the story are lost.

Much scepticism has been expressed upon the subject of these subterranean vaulted passages found in or about so many old English houses. The late Mr. Parker, of Oxford, declared positively against the idea of these being secret means of escape; he asserted that they were simply drains. This, however, is disproved in a great number of instances by the passage having no inclination and rarely leading to any place whence the drainage could either flow away or be artificially removed; the cases, too, are innumerable in which they co-exist with other and distinct arrangements for drainage. Nor is this all. Every student of the older domestic architecture of England has found these tunnels running from one important house to another, often at a considerable distance. The writer is well acquainted with one such instance in a part of Hertfordshire where he lived many years. The old manor-house at Cheshunt, now neglected and dilapidated, its fine hall hung with pictures by Rubens and Vandyck dropping from their frames, its wainscoted chambers and stately staircase mouldering and worm-eaten, communicates by means of a vaulted passage with Waltham Abbey, which is distant nearly three miles. This tunnel passes under the River Lea and can be traced throughout, in spite of many obstructions caused by the falling-in of masonry and bad ventilation.

In the old houses of the seventeenth century bordering upon Greenwich Park, there are several cases of passages leading down to the Thames and entered by a door in such a position as to preclude all idea of any sanitary purpose. But the advantages of such a means of entering or leaving a building unobserved in times of political disturbance, and in an age when the mere suspicion of holding certain opinions was enough to endanger a man's liberty, and even his life, are too obvious to need recital. In the present instance the passage leads to Beddington, an old manor of the Carew family, who were in high favor with Queen Bess.

The palace was sold and the residence of the primates transferred to Addington in the last century. Some parts of the building were long used as a laundry, others as the parish school. Fortunately, before it became a complete ruin it was generously purchased by the Duke of Newcastle and presented to the Kilburn Sisters, who have established an excellent school within the walls. The building in its present state calls for the hand and purse of the restorer, and—if the former be not too heavy—there is a good work waiting to be done by those who are interested in a remarkable fragment of English architecture.

Originally, there was a large principal court with hall, chapel, housekeeper's house, porter's lodge and stables: the south and part of the west sides alone remain. The finest feature of the pile is the Great Hall. It is very lofty, rising to 70 feet, with openwork chest-

nut roof, quite perfect; its width is 38 feet, but the length, although reaching to 56 feet, is not in consonance with the usual proportions of English halls; it looks nearly square, and this is so exceptional a plan as to strike the spectator with a sense of awkwardness. But there is reason to suppose that it was much longer; the present east wall is modern, replacing one which fell in 1830; that in its turn dates, probably, from Juxon's time, the room having suffered considerably under the Commonwealth. The principals of the fine chestnut roof spring from angel-corbels holding shields



Croydon Palace and Church.

finely carved with the arms of several primates, of the Duke of Buckingham—Shakespeare's Buckingham, beheaded in 1483—and of Richard, Duke of York (1460). At the eastern end was once a music gallery, over the usual screen, with its openings for servants to pass through from the kitchen. The windows are Perpendicular, and the hall was either quite rebuilt or completely renovated by Archbishop Stafford between 1443 and 1452.

Assuming that the room was originally much longer, the beautiful vaulted porch now at its northeastern corner would formerly have

given entrance to the centre or nearly so; it is boldly groined, with carved bosses, and has some superb mouldings.

At the western end a massive structure of stone projects into the room, resembling an internal buttress; its exact purpose is unknown; upon it is carved an elaborate shield with the arms of Edward the Confessor and of some much later sovereign, possibly, judging from the covered crown which surmounts it, Henry VI.

The Withdrawing Room, used at a later period as the Guard Chamber, is characteristic and in good preservation; it possesses a



Vaulted Porch: Entrance to Great Hall, Croydon Palace.

beautiful oriel-window and a fine timber roof; the principals spring from angel-corbels with shields showing the arms of Archbishop Arundel. It is 50 feet long by 22 feet wide. Beyond this is a large room supposed to have been the library. It is panelled and the roof deserves mention for a method of treatment at once simple and vigorous; it consists of leaving the rafters uncovered; they are deep, however, and richly moulded. In other parts of the building the same system prevails; where, as in some of the passages, cross-beams are introduced, the effect is to divide the roof into a series of narrow coffers about five feet—in parts nine—long by 10 inches wide and nearly a foot in depth; the timber, both chestnut and oak, is left in its natural color; the mouldings are in threes, with a deep cavetto between. In Italy a similar system may be seen in the old palaces of Verona and also at Venice; it plays a conspicuous part also in some of the timber buildings in Norway; color being freely applied, but mouldings are rare; those of Croydon Palace are unique.

The chapel is 74 feet long by 24 feet wide, but of moderate height, not more than 18 feet. Externally it is of red brick, with stone dressings, door-casings and window-mullions. A curious feature is the west wall, which slants on plan from southwest to northeast; diagonally across its southwestern corner is a gallery used by Elizabeth on her visits, and called "the Queen's Pew;" it is reached by a small steep wooden stair from the floor of the chapel, her own private approach being from the floor above; under the gallery is a small narrow door; at the opposite corner is a very large doorway and massive door, from which a wide stone staircase leads down to the courtyard.

The room, which is of the type usual in large English residences of the late Mediæval Period, is not unlike a college chapel at Oxford or Cambridge; panelled in oak and at the east end in cedar; the desk ends or "poppy heads" are richly carved with the arms of the See of Canterbury impaling those of Juxon and Laud. This chapel, like that at Lambeth, has a fearful association with Laud: the heated imagination of his opponents detected "Popery" in some of the details here as they also did in his stained-glass at Lambeth, and in those terrible times the suspicion cost the unhappy prelate his head.

The apartment is lighted by seven Perpendicular windows: the east window is formed of seven lancet-headed lights, the whole enclosed in a casing of Perpendicular stonework; on either side of it are double pilasters in wood, fluted, the capitals Corinthian. This Renaissance detail is very happily harmonized with and subordinated to the Gothic work around it. Towards the west end a screen of moderate height cuts off a species of antechapel; it is panelled, the upper part perforated and glazed; the door, with the archbishop's throne beside it, is in the middle. From her raised pew, the Queen could see the chancel easily over the screen; it is carved with late Gothic work. The rooms occupied by Elizabeth are at the end of the Great Hall and have windows on three sides; two which now look down into the hall originally gave light to a small passage divided from her bedchamber by a slight partition intended to enable attendants to pass without disturbing her. The Queen was often here. Although the house was larger then than now, as so much has been pulled down, she travelled with such a retinue that it was difficult to accommodate them. Bowyer, Gentleman of the Black Rod, writing on the 14th of July, 1573, was at his wit's end to find lodgings for them in the Palace and town. "For the Queen's wayghters [waiters] I cannot as yet find any convenient romes to place them in, but I will doo the best I can to place them elsewhere, but yf yt please you Sr I doo remove them. The gromes of the Privye Chamber nor Mr. Drowrye have no other waye to their chambers but to

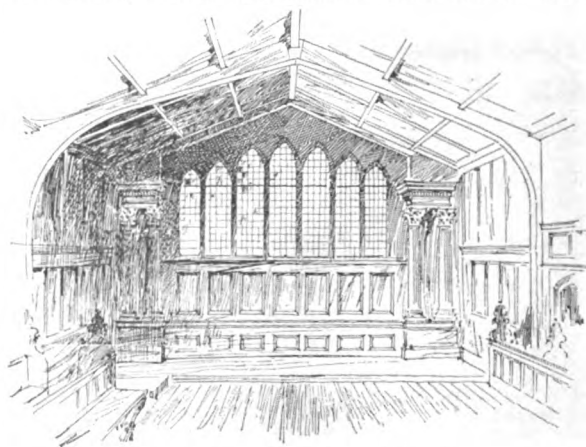
pass thorowe that waye agayne that my Lady of Oxford should come. I cannot then tell where to place Mr. Hatton; and for my Lady Carewe here is no place with a chymeney for her but that she must lay abrode by Mr. Aparry. Here is as mutche as I have any wayes been able to doo in this house. From Croydon this present Wensday mornynge, your Honnors alwayes most bowden [bounden] S. Bowyer."

The Long Gallery has been divided into several rooms to give increased accommodation. It was here that one scene in Sir Christopher Hatton's fortunate career took place, for on the 29th of April, 1587, "at Croydon in the Archbishop of Canterbury's house, he received the great seale in the gallery there." His advancement was due to Whitgift, according to the archbishop's biographers; popular tradition in England, however, for three hundred years has attributed it to his skill in dancing, which delighted the Queen, and the belief, too strong to be shaken now, is embodied in Gray's flowing lines,

His bushy beard, his shoe-strings green,
His high-crowned hat and satin doublet,
Moved the stout heart of England's Queen,
Though Pope and Spaniard could not trouble it.

Chicheley, who preceded Stafford, lived much at Croydon; on 7th of July, 1441, he appointed Adam and Richard Pykman *custodes capitalis mansi manerii de Croydon*, for life. The architectural history of the building is occasionally alluded to in the Registers at Lambeth; from these we learn that Richard de Fairford and Thomas de Bunchesham, the latter reeve (sheriff) of Croydon, repaired the kitchen and "salsary"; boarded the wardrobe; weather-boarded the bakehouse and stables, also the sheepcotes and stalls for oxen: this was in the time of Archbishop Reynolds, somewhere between the years 1313 and 1327. Further references confirm the inference from the text that a large part of the buildings constituting the Palace were then of timber: this was the case with most structures of the time, only the hall and principal chambers being of stone or flints. Associating as we do all mediæval work with ideas of solidity and strength, we sometimes fail to realize the fact of its slow development, especially in England, from the simple dwellings of the Saxons to the elaborate palaces, colleges, monasteries and manor-houses of the fifteenth century. Previous to Courtenay's time, many public acts seem to have been performed and documents sealed by the archbishop's bed (*juxta lectum domini*: sometimes *ad pedes lecti*); after him, as ideas of comfort increased, we read of a chief chamber, probably a sitting-room of some sort. He built a small private chapel, now to be traced, it is said, in the basement, the large one being styled *capella manerii de Croydon*; in fact, several small chapels and oratories are known to have existed, and it has been thought that the *capella* here alluded to is really the great Parish Church hard by, no other building being large enough for the immense assemblages of people connected with a mediæval prelate who was also virtually a temporal prince. But if churches were splendid, private dwellings long continued to be very simple in their arrangements, and walls of stone none too plentiful. In the *computus*, or roll, of Adam Bochers, who was reeve of Croydon from Michaelmas, 1399–1400, he mentions some "works and walls of lath and plaster," with ridge tiles above, as the ordinary mode of constructing light walls, as flint and sometimes stone were for heavy ones, before the great revolution effected by the reintroduction of bricks.

The Palace is, almost throughout its extent, raised upon an immensely massive basement, whose walls appear at first sight to be of red brick; examination proves, however, that this is only a dressing; the core is mainly of flints and Godstone stone and the brickwork

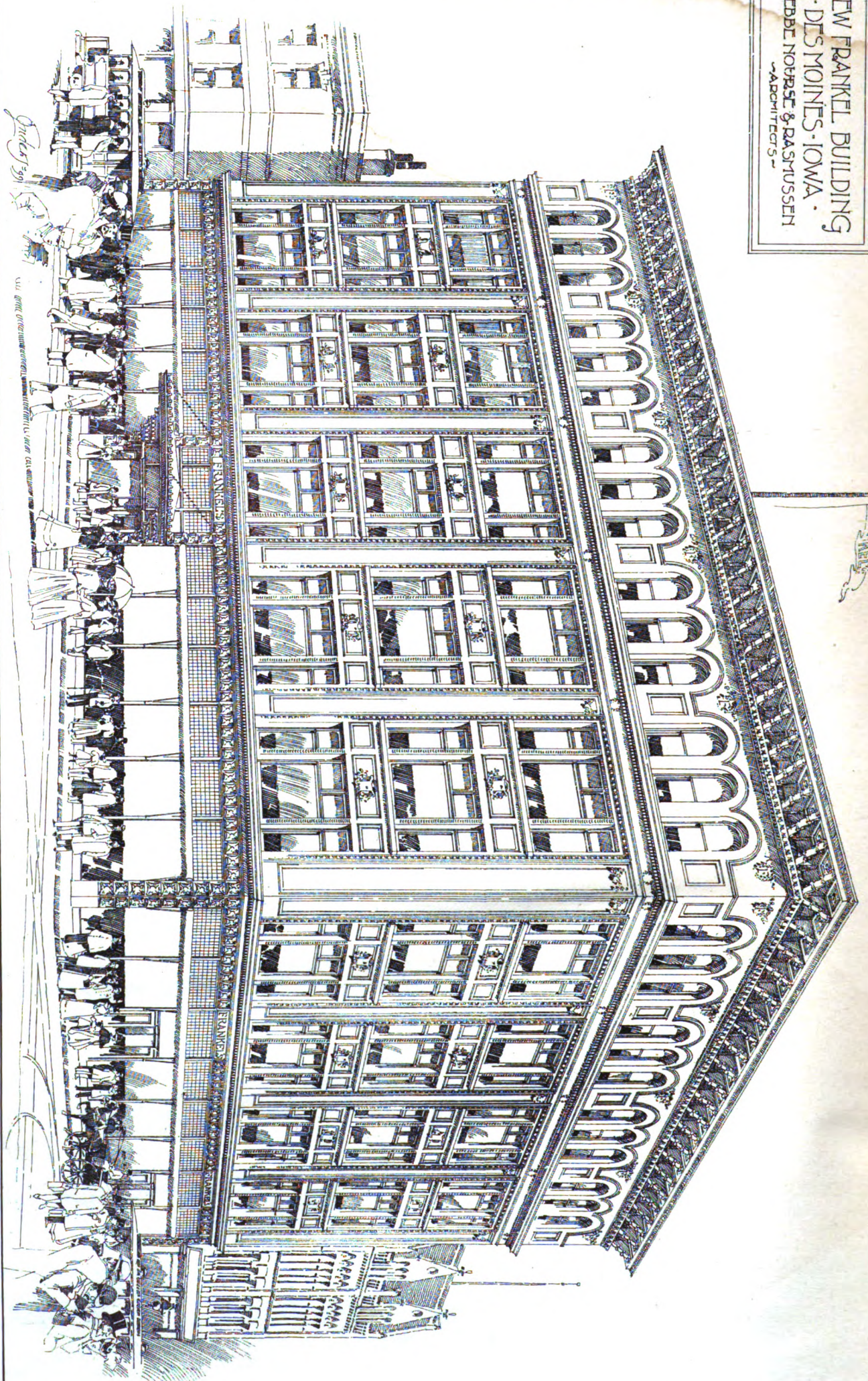


East Window of Chapel, Croydon Palace.

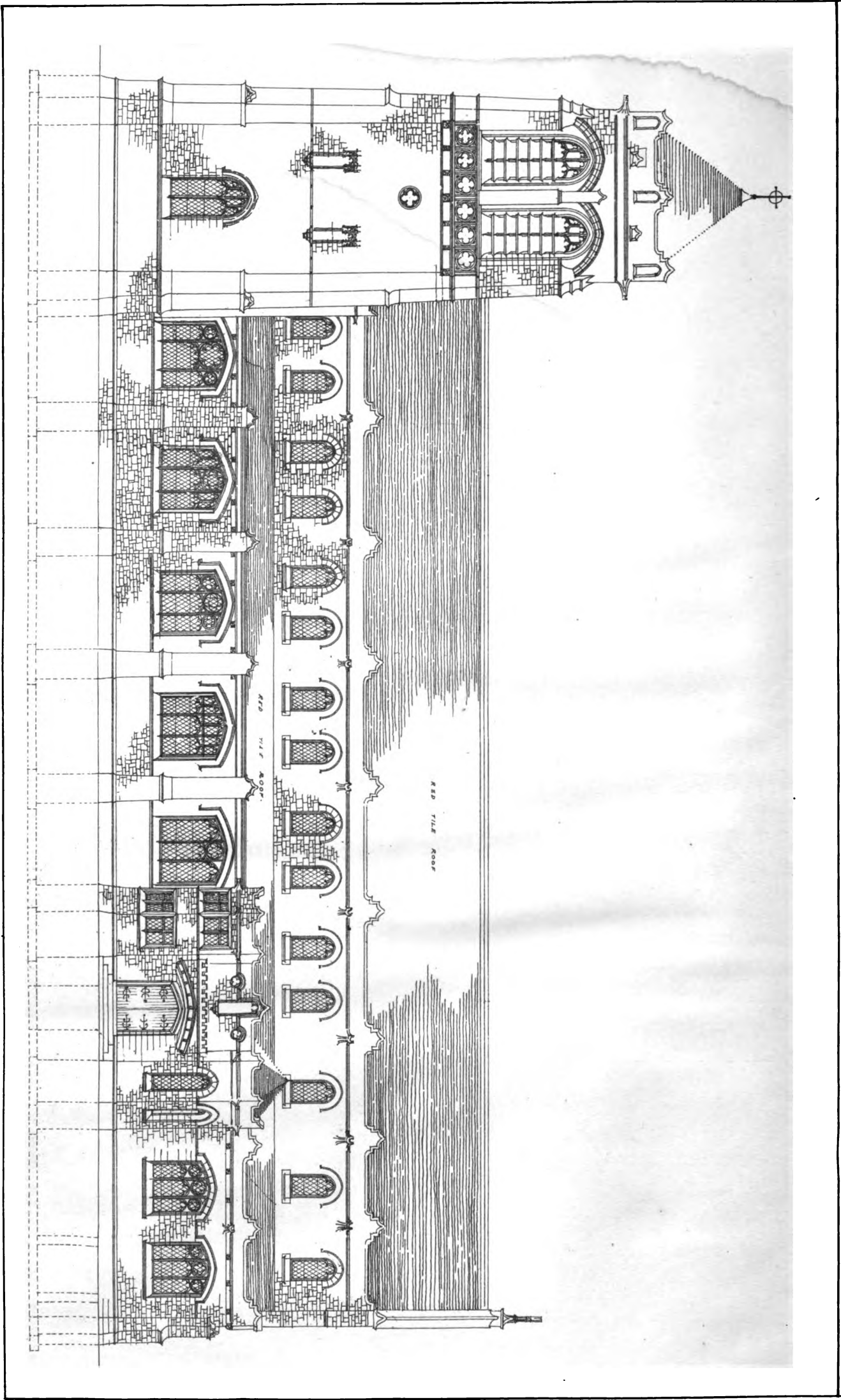
is only one more instance of the practice of casing walls; when a change in material or in style set in, these old builders seem to have applied it without one thought of the past; the sentiment which leads us to conserve and revere an ancient piece of walling or an architectural feature was to them a thing unknown. This red brick, so popular in England as almost to deserve the name of the national building material, was introduced in the reign of Henry VI, the Chapel at Eton and the Castle of Herstmonceux being among the earliest examples. The basement under the Palace is now raised

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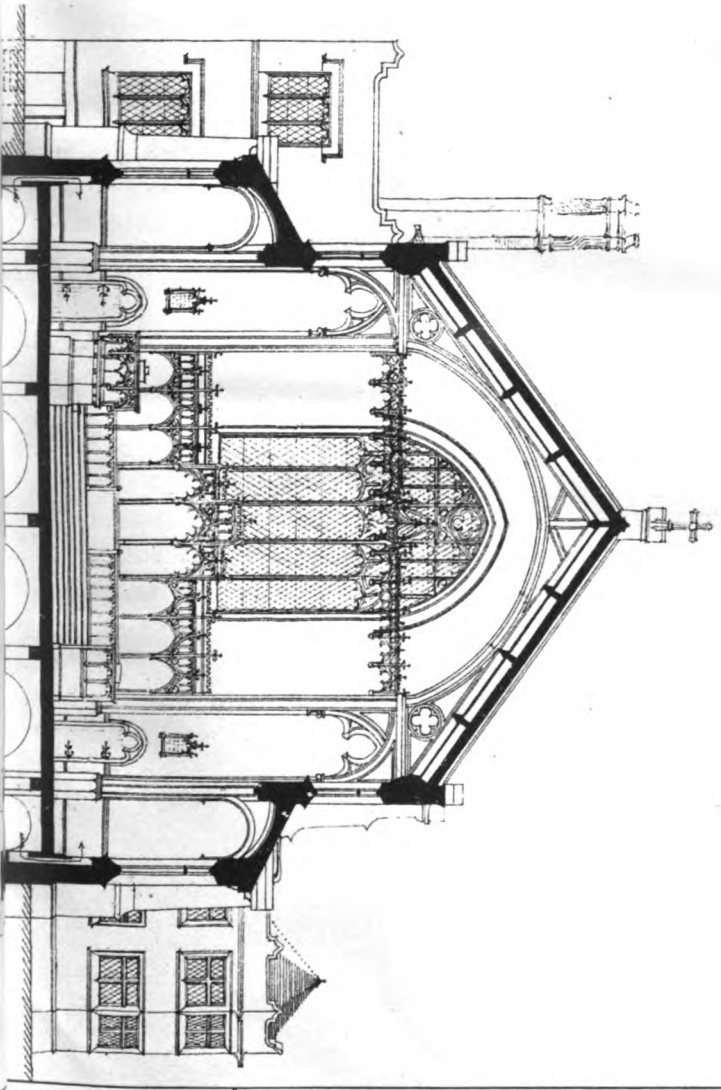
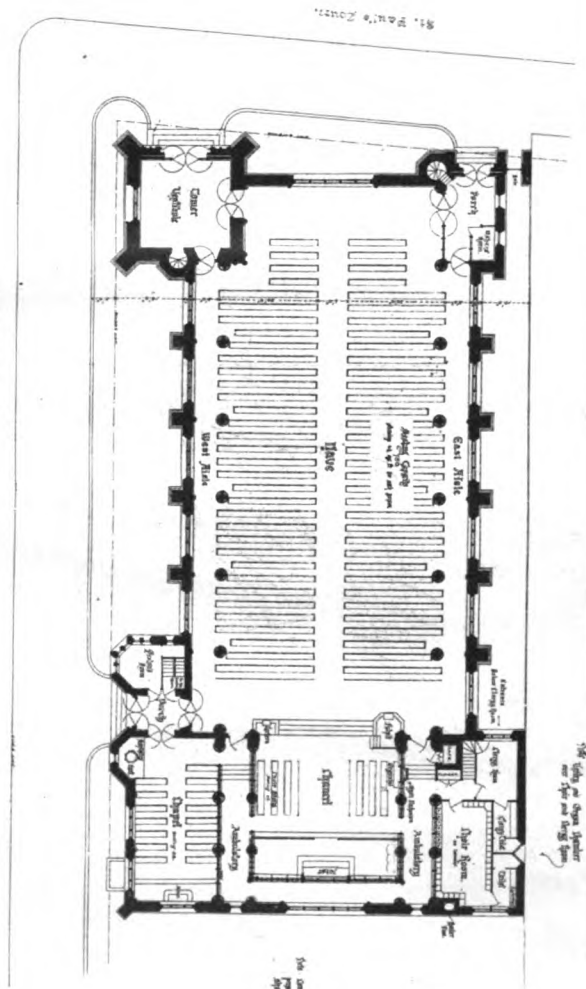
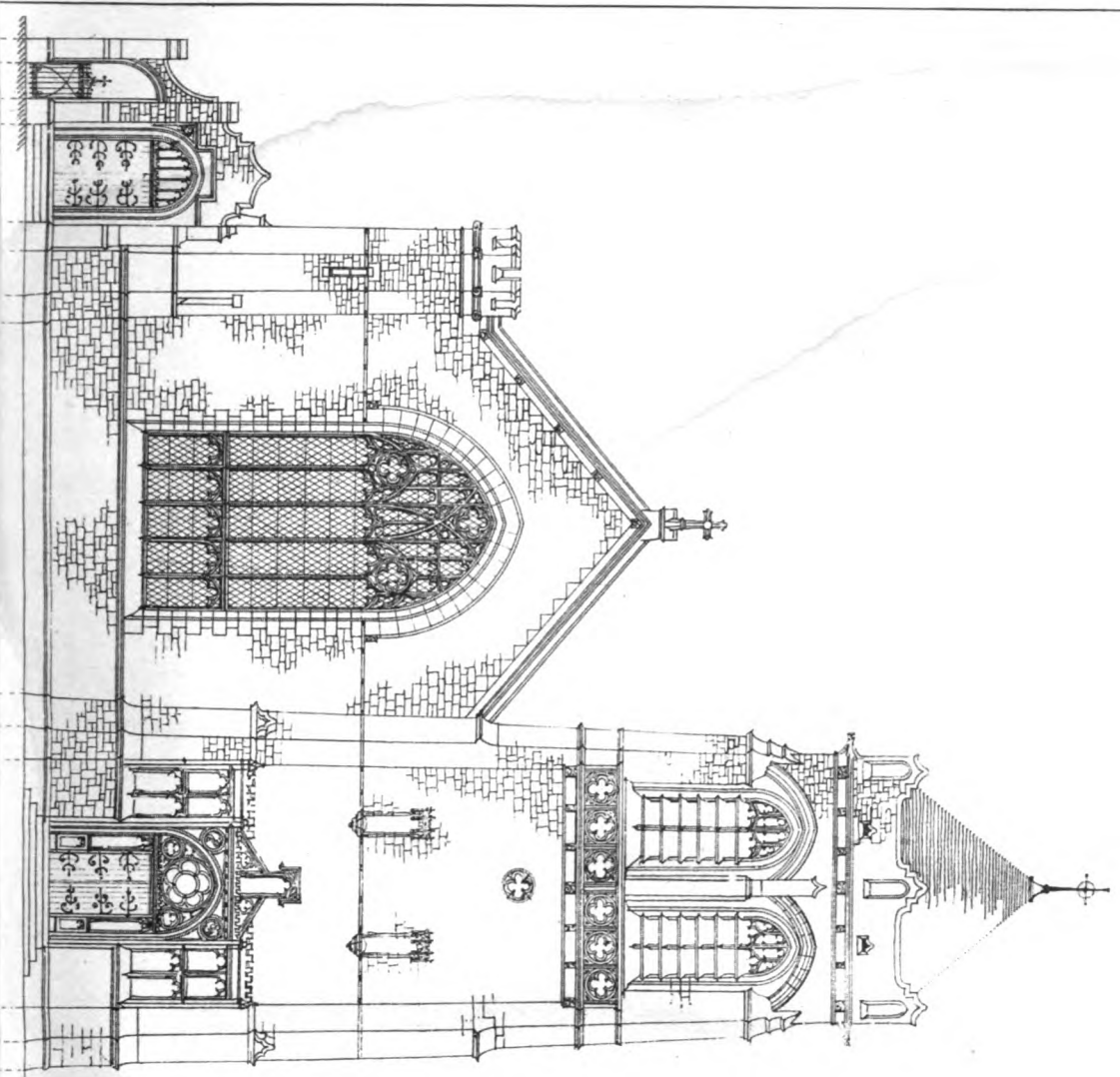
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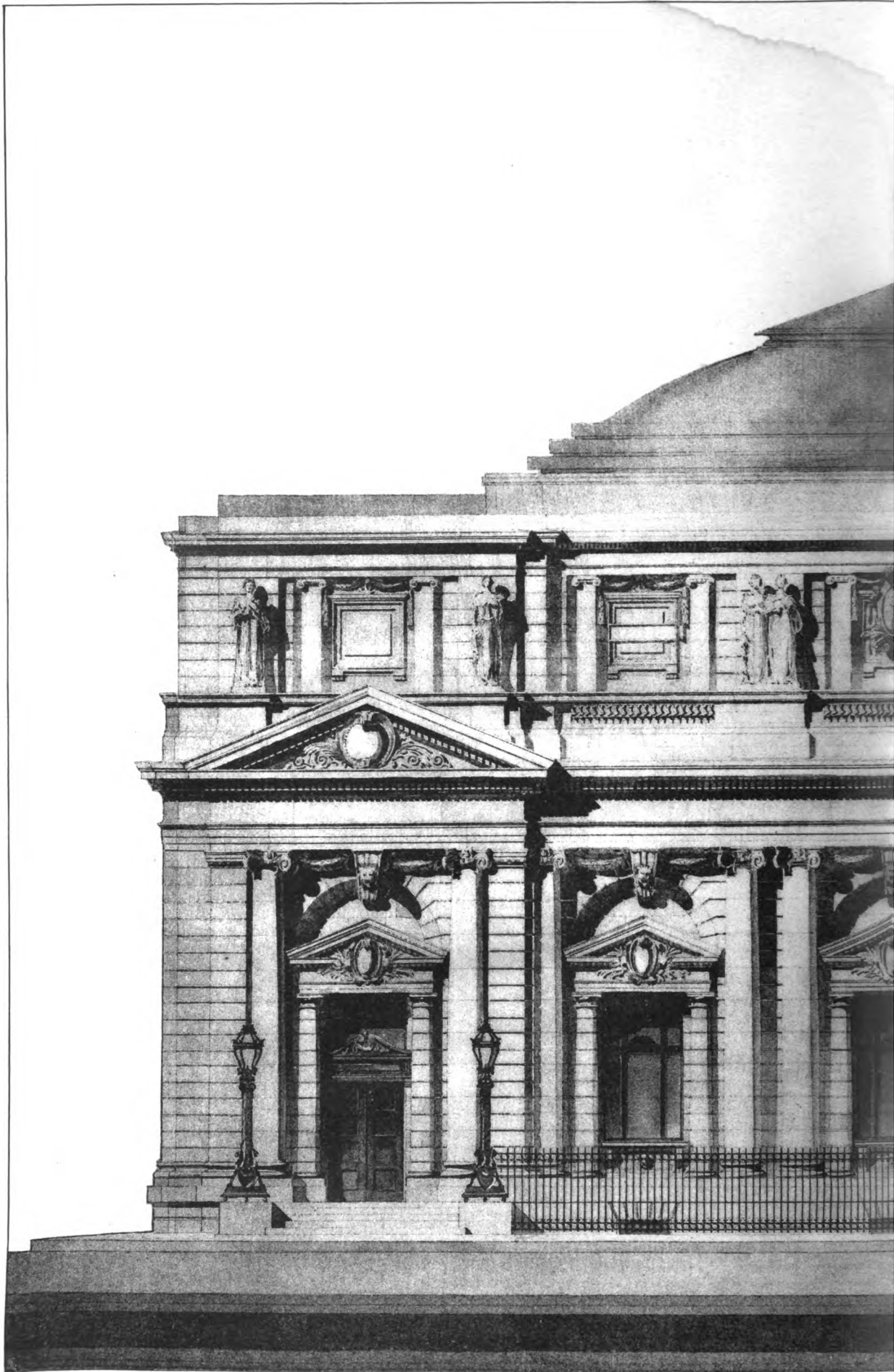


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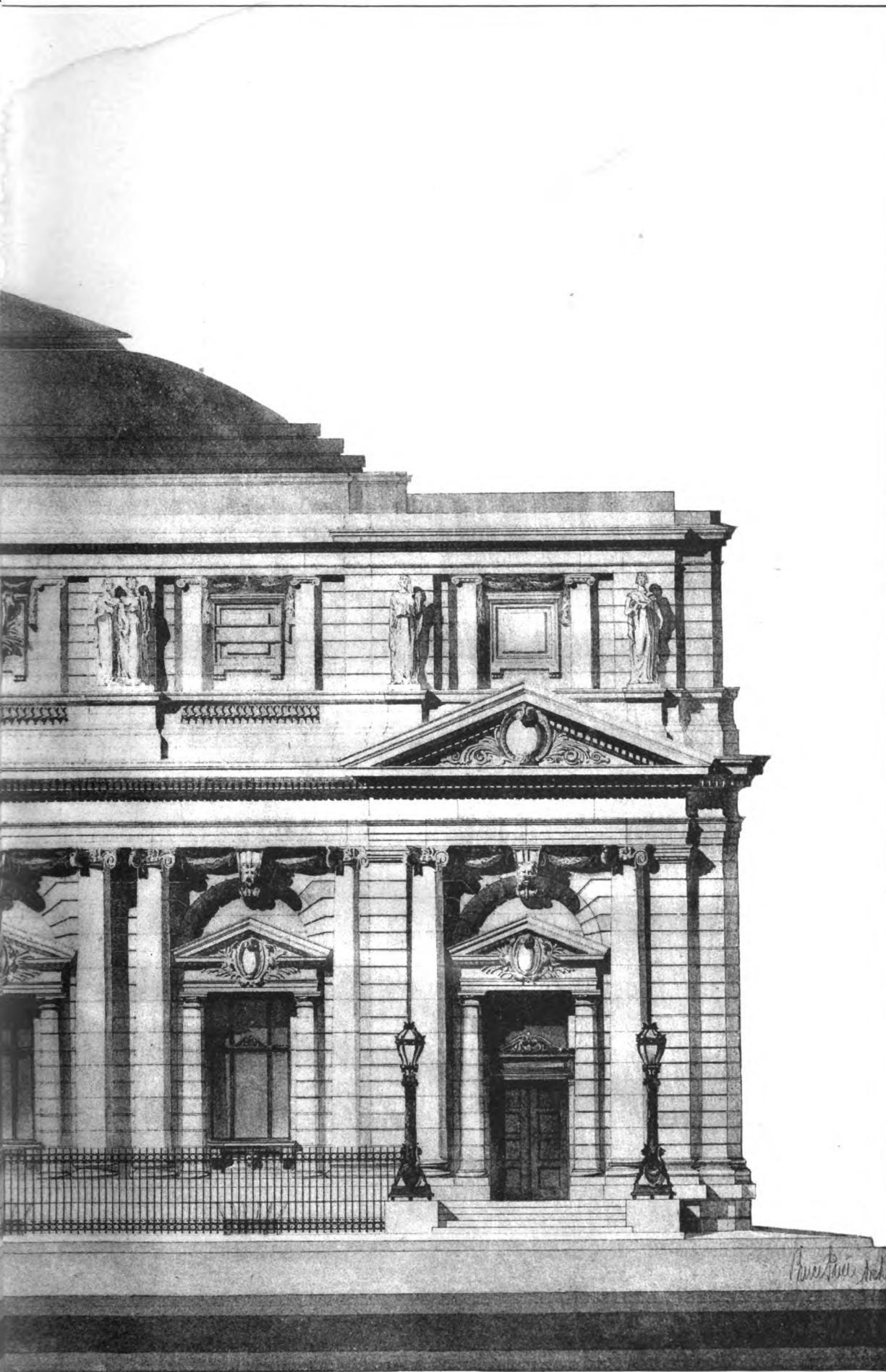
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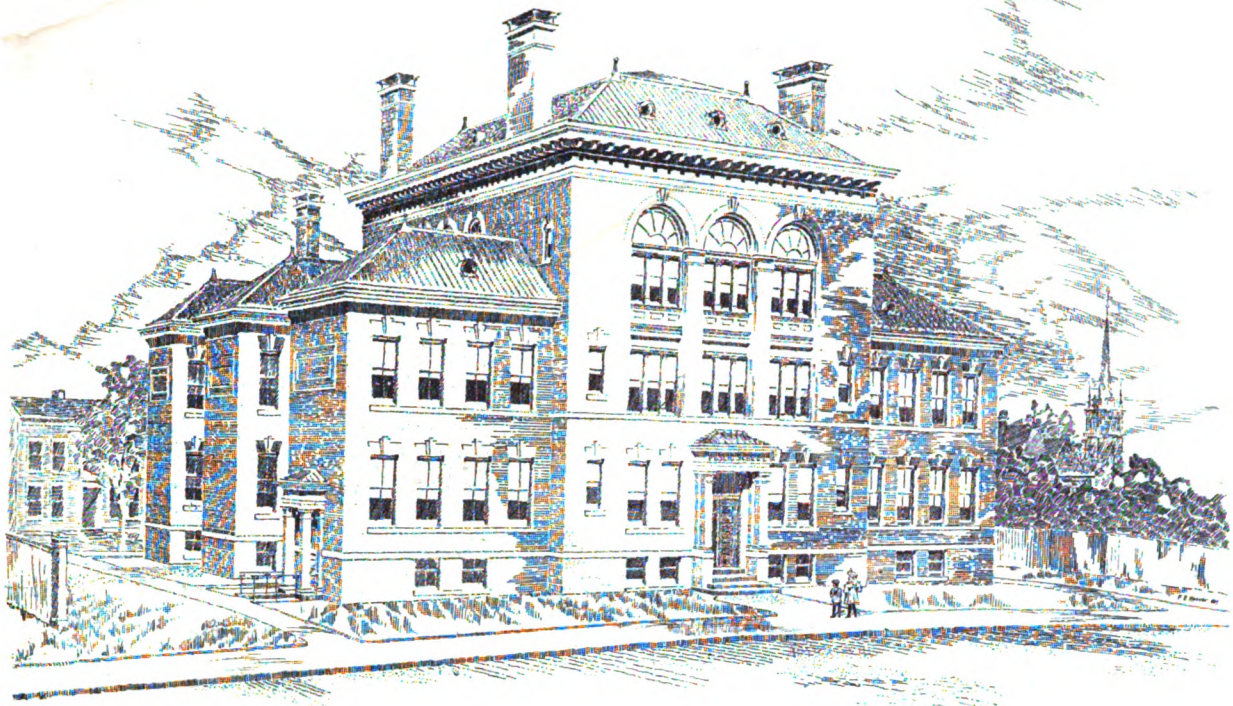


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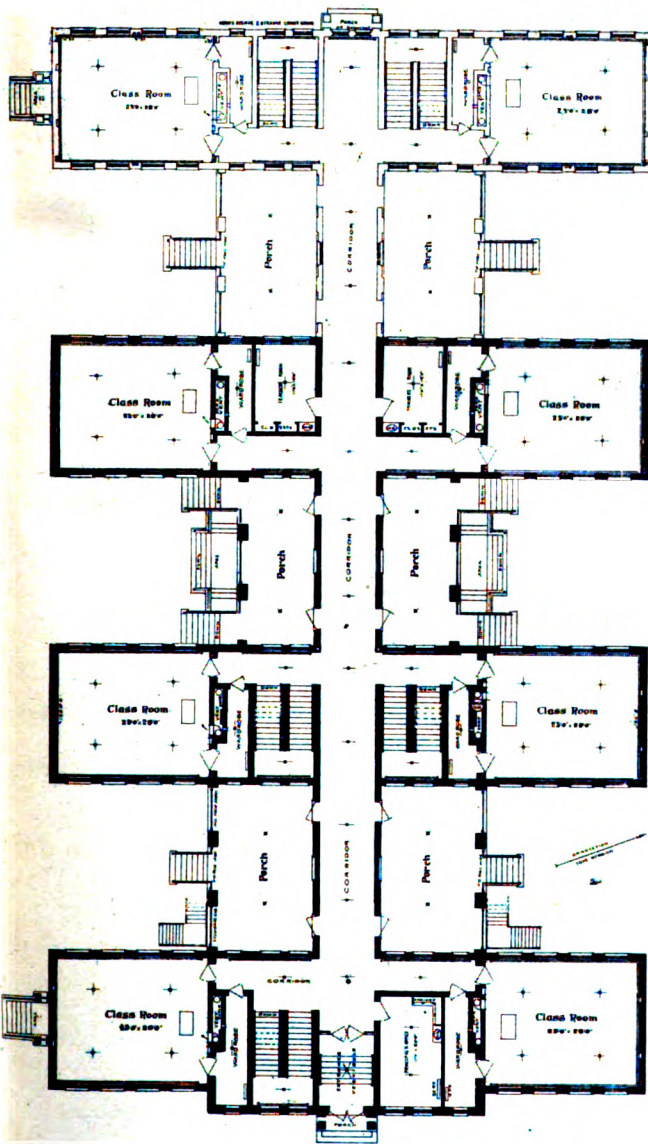


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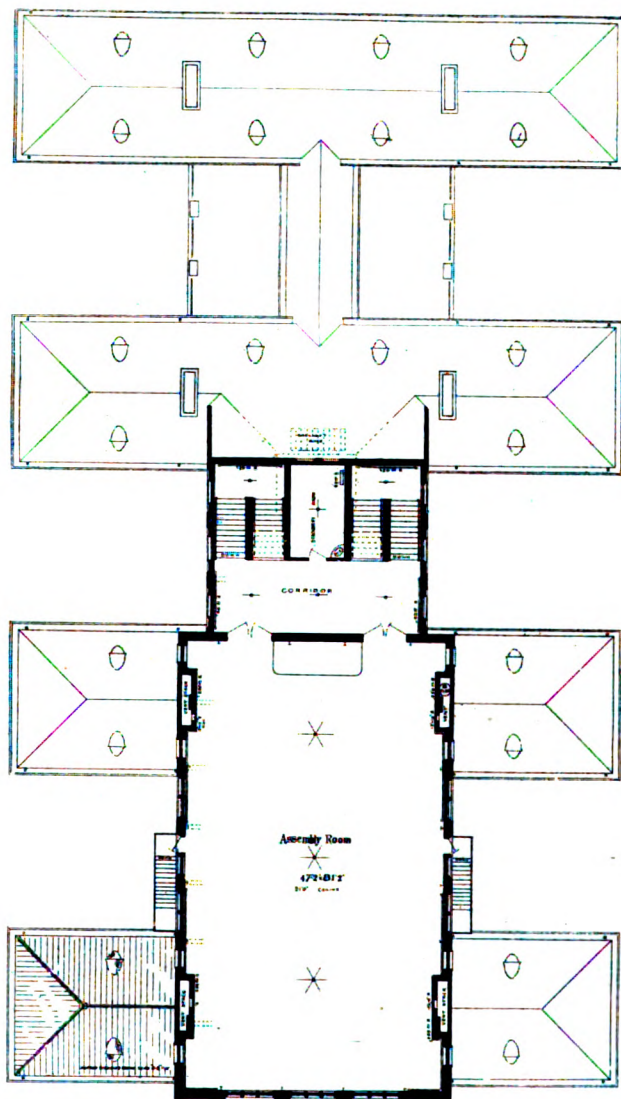
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P. B. B. A. C. ARCHITECT.



GUSTAVUS STAEHLIN ARCHITECT



FIRST FLOOR PLAN



THIRD FLOOR PLAN

THE BRUCE STREET SCHOOL, NEWARK, N. J.
GUSTAVUS STAEHLIN, ARCHITECT.

about eight feet above the ground, though the height differs in parts, but there is abundant evidence of the earth-level having risen, thus diminishing the apparent height, as in so many old buildings: the visitor, for instance, steps down into the porch whose plinth is almost submerged and its original pavement several feet underground. The basement now presents a singular spectacle: walls of enormous thickness dividing it into many chambers; overhead wooden beams of immense size; neglect, patchwork repairs and semi-darkness prevail in the greater part, and many Gothic windows have been filled up with brickwork; the floor is uneven and far above its original level. But it must once have been a useful and even imposing feature of the place with much fine Gothic detail. It was here most probably that lodging was found for the numerous retainers, servants and soldiers who thronged the Archbishop's Court, as the records represent the primates as riding forth attended by nobles and gentry, chaplains and followers, the whole cavalcade escorted by a considerable body of soldiers, who also acted as a garrison in this as in most of the great houses of the Kingdom.

The Archbishop of Canterbury was usually Lord Chancellor as well, thus uniting legal with clerical functions. In the paucity of educated men his services were further utilized as the chief adviser or minister of the reigning sovereign and a vast mass of business since transferred to departments of modern creation had to be daily transacted under his eye. The custom of the age involved the exercise of a profuse hospitality; inns were few and, in Chaucer's words, "houses far asunder": the far-spreading buildings of these old establishments thus explain themselves, while the frequent journeys from manor to manor arose partly from the necessity of personally inspecting and governing both the Church and the State, and partly from the difficulty of feeding the great assemblages of people of all ranks thus brought together: as soon as the cattle, sheep, poultry and crops of one estate showed signs of depletion, the Court, whether of the King, the Archbishop, or of a powerful Earl or Baron, moved on to another, suitors and attendants following as best they might.

In the Civil Wars, Croydon Palace shared the fate of Lambeth and was much damaged, falling first to the Earl of Nottingham and then to Sir William Brereton, "Colonel-General for the Cheshire forces," who turned the chapel into a kitchen. Its neighbor, the Parish Church, fared no better, one Blease being paid half a crown a day for breaking its superb painted windows!

At the Restoration, the short administration of Archbishop Juxon was occupied in repairing as much as possible of this injury, and from his time a large portion of the present pile of buildings may be dated. As years passed by they were more than once altered; the Archbishop's office no longer involved the employment of crowds of dependants; many chambers, decaying from want of use, were pulled down, and the place was finally sold and Addington Park bought in its stead.

Archbishop Herring was the last primate of all England who lived in the Palace; to him the heavy tie-beams in the Great Hall are due, a necessary protection to the ancient fabric but somewhat obscuring the symmetry of the beautiful openwork-roof above: his arms, *three herrings argent*, quartering Canterbury, terminate the long series of blazonings, carved and—originally—painted, which adorn the house and add one more testimony to the value of heraldry as an adjunct of architectural study. But the name which lingers most at Croydon is that of Whitgift, whose Grammar School and Hospital, the former now rebuilt, the latter a simple Elizabethan building, are in the main street. He "had ever a great affection to lie at his mansion-house at Croydon for the sweetness of the place, especially in summer time."

J. C. PAGET.

moment in possession of legal proofs so convincing as to justify legal proceedings being taken."

It is then, apparently, not sufficient to have an Act in force,—an architect who has not conformed to the requirements of the law, is still able to practise to the extent, at any rate, of continuing to call himself an architect, but how far he may go, without providing for those on the watch sufficiently convincing legal proofs of the fact, is a question which time, perhaps, will answer. At any rate, these "illegal practitioners" are running a risk that may land them in the courts one of these days. But it looks as if there were a defect somewhere in the law, as the ends in view seem difficult of attainment in spite of the definite wording of the Act.

The attendance of the members at this Convention was small, probably on account of the meeting being held in Quebec instead of Montreal, and, naturally, the proceedings were somewhat dull in comparison with the previous Convention, when all the members were in high glee over the success which had just crowned their efforts to secure legislation. The new President of the Association is Prof. S. H. Capper, Professor of Architecture at McGill University, Montreal, a graduate of the University of Edinburgh and an Associate of the Royal Institute of British Architects.

It is reported that the remains of the Ontario Association of Architects will be produced by the officers for public inspection in convention form about the middle of January, when in all probability they will be decently interred. The sinews are stated to be drying-up, it is evident that they have very considerably shrunk, and there appears to be little chance of new life being infused. The efforts of unskilful doctors have resulted in prolonging life, but the decadence under the treatment has been steady and increasing until it is little else than a skeleton that can be exhibited. During the intervening weeks suggestions for its revivification will be thankfully received, provided they are such as have not been offered before and that they are well worked out and substantially backed up.

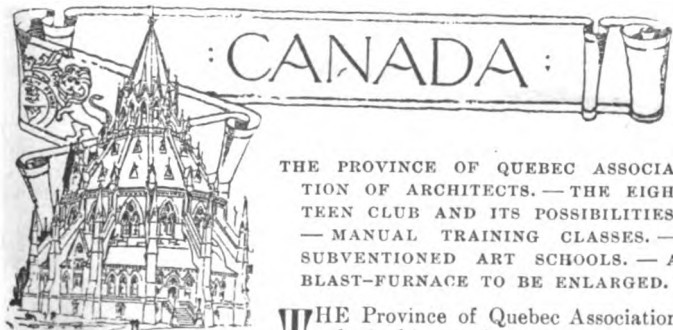
The younger members of the profession in Toronto have organized an architectural club known as "The Eighteen Club" and this new society appears to be full of life and vim. It should be a thorn in the side of the Ontario Association of Architects (if that society had any flesh into which a thorn could be run), for this new club holds aloof from the Association and will have nothing to say to it. A new generation of architects has sprung up since the Provincial Association was first organized and these have no feelings of distress at the dying of that society. They have learned that there is nothing to be gained by entering its folds, that it is not in any way suitable to their needs, and, therefore, they are starting "out on their own hook," and providing for themselves that which they cannot obtain through the Ontario Association of Architects. They are not to be blamed, but rather commended; the only wonder is, that some other society was not formed long ago, to further the ends that the Ontario Association professed, but lamentably failed in.

Sir William Macdonald, who has so liberally assisted in the establishment of so many professional chairs and educational buildings at the McGill University, in Montreal, by his princely gifts, has again come forward with a handsome offer. He has agreed to bear the cost, for three years, of an effort to establish manual-training classes in one centre in each of the eight Provinces of the Dominion. Professor Robertson, the Dominion Agricultural Commissioner, who takes a keen personal interest in technical education, has been appointed to take charge of the matter, and the funds are to be under his control. Competent men have been engaged to superintend the experiment under Professor Robertson. The scheme has been thoroughly developed and will soon be put in practice.

The plan is that in one city in each province, a place shall be secured at which, on one or two days in the week, scholars, aged from nine to fourteen years, shall spend a few hours in actual use of tools. Evening classes will be held for the benefit of older students and mechanics, and special instructors will attend.

It is true that there are already established Technical Schools in some of the principal cities. They have, I believe, a small Government grant and this is sometimes supplemented by a Municipal grant, but there appears to have been a very great deal of dissatisfaction over the usual management, the funds have been insufficient, and worse than that, the results to the students attending have not been satisfactory. The poor remuneration allowed to the instructors, though it was all that the means at hand permitted, has failed to secure the best teachers, and this vital insufficiency has had an injurious effect upon the whole system. Technical Schools are looked down upon by those who should be the chief beneficiaries. It is hoped that the subject, since it has attracted lately so much attention, will now be properly dealt with and the start being given by Sir W. Macdonald in a practical direction, with the details being worked out by practical men, the future of Technical Schools will be what it ought to be—an immense benefit to the students.

The Art Schools come under similar condemnation, although from a different cause. They likewise have Government and Municipal aid, and are generally supported locally in such a manner that it is possible to secure for them better-qualified instructors. But it is found that there is something faulty in the system: the course of training is governed and limited by a stereotyped examination arranged by Government officials of the Education Department who know as little about art as it is expected they could know. Until greater freedom is allowed and the Government grant is given, freed from cast-iron regulations, the Art Schools of Canada will never



THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.—THE EIGHTEEN CLUB AND ITS POSSIBILITIES.—MANUAL TRAINING CLASSES.—SUBVENTIONED ART SCHOOLS.—A BLAST-FURNACE TO BE ENLARGED.

THE Province of Quebec Association of Architects, having secured to themselves by act of local legislature the right to preserve all the professional work of the Province to themselves and prohibit architects of other provinces or countries, except under certain conditions, from practising within their border, are now confronted with the fact that the law, to be of any use, must be upheld and enforced, and action must be taken against such architects who invade their precincts contrary to the terms of the Act, and in face of the protest of the Association. That there are such men who openly dare to practise as if there were no such law is evidenced by a clause of the Ninth Annual Report of the Council presented at the Convention recently held at Quebec. "The Council has devoted earnest attention to the question of instituting proceedings at law against those illegally practising as architects within the Province. . . . In the opinion of our legal adviser we are not at the present

produce designers who can be of use to the manufacturer. The Art Schools can train up to a certain point as they are: so can any drawing-master who has not the school influence or prestige to back him up, and therefore the Art Schools become mere drawing-schools and are not what they should be — training-schools whence a student may pass qualified to take a place as a designer for manufacturers. The students at the Art Schools having finished the prescribed course find they have only learned to draw. They attempt to get situations where their talents may be of use in the draughting offices of the manufacturers, and when successful they understand that they have then to begin their training in design, which they should have received at the schools and believed they were receiving.

The Art School masters should be up-to-date men. Fashion dictates the character of design and fashions continually change. It is too often the practice of these art masters to develop in a student some particular character or style of design for which the student has shown a predilection to the exclusion of all others. The result looks well; the student becomes an adept in one line and his drawing takes prizes and reflects credit upon the school, but in this the master has worked for his own interest rather than that of the student. These matters are beginning to arouse public attention, and though reforms take a long while to institute, a move is being made in the right direction.

A blast-furnace company that began business in Ontario some years ago built a plant capable of turning out two hundred tons a day, but very soon found that they could not dispose of more than one hundred tons a day. Consequently they reduced their furnaces about two years ago. Now the demand for iron and steel is so great that the plant is to be entirely rebuilt for a capacity of two hundred and fifty tons a day and a complete steel plant is to be added, capable of complying with the demand. The company expects to turn out ninety thousand tons a year, a quantity greater than has heretofore been used in Canada alone in one year.

The immense increase in business all round seems to be staggering the railway companies, who cannot provide cars to transport produce. Cars are being built as fast as possible, but in the meantime all but perishable goods have to be held over to await their turn of handling.

SOME RECENT DISCOVERIES IN OLD ROME.



THE visit which I have just paid to the excavations of the Forum and of the Sacra Via, after an absence of four months, makes me realize how little is known at home and abroad about their importance and magnitude. The few bits of information which I was able to gather while absent, from Roman papers, or from Roman correspondence to foreign papers, give a very meagre idea of their development and archaeological results. The Minister of Public Instruction, Guido Baccelli, is so anxious to make an advance in the direction of the Forum Julium and the Forum Augustum, and to open up fully the Senate House, now represented by the Church of St. Adriano, that the work of excavation is carried on without intermission by day and by night. For the convenience of readers of the *Athenæum* I shall consider in due order each building or group of buildings, beginning with the Atrium Vestæ, within the walls of which the latest finds have taken place.

First of all, I must speak of the *ripostiglio*, or hidden treasure, of gold pieces discovered recently in a branch drain, near the west corner of the edifice, adjoining the Church of St. Maria Liberatrice. It consists of nearly four hundred *aurei*, which must have been thrown into the drain in a leather bag, or done up in a piece of cloth, on the occasion of one of the barbaric invasions of the last quarter of the fifth century. The oldest coin dates from the time of Flavius Julius Constantius (Constantius II, 337-361 A. D.) and shows the figures of Rome and Constantinople supporting a shield, with the legend "*Gloria Reipublicæ*." Next come several *aurei* of Valentinian III, son of Constantius III and Galla Placidia, associated to the Empire A. D. 425; slain by Petronius Maximus in 455. The reverse of these coins shows the Emperor crushing with his right foot the head of a dragon, and holding the sign of the cross with one hand, the globe and the victory with the other. By far the greatest number of coins — three hundred and more — belong to the Emperor Anthemius, son of Procopius, slain by his son-in-law, Ricimer, in 467. The rarest set of all is one of nine pieces with the effigy and the name of Ælia Marcia Euphemia, daughter of the Emperor Marcianus, and wife of Anthemius. Remarkable, also, are some *aurei* of Libius Severus, poisoned by Primicerius in 465, and of Marcianus, poisoned by Aspar in 457 while preparing an expedition against the Vandals. The latest pieces in the chronology of the *ripostiglio* belong to the Emperor Leo I, crowned in 457, whose death took place in 474.

It is difficult to connect the burial of this considerable sum of money with any particular event in the history of the barbaric inroads which marked the end of the fifth century. There is no doubt, however, that the gold was thrown into the cesspool under the apprehension of an impending pillage. The House of the Vestals, abandoned by the Sisterhood since its suppression in 393, was probably falling into ruin, and the owner of the gold selected the hiding-place so skilfully that not only did it escape being plundered by the barbarians, but the owner himself could not recover it after the danger was over. Perhaps he lost his life in the defence of the city; perhaps he was carried away into slavery; perhaps this wing of the

cloisters fell to the ground, and the hiding-place remained buried under a heavy mass of debris.

Discoveries of this kind are by no means a rare occurrence in Rome. Six thousand four hundred brass coins were found in 1880 in a drain near the tomb of Sulpicius Platorinus, in the Trastevere; and almost as many in 1876 in another sewer near the present Piazza di Magnanapoli, on the Quirinal. This practice may help us to explain, to a certain extent, the presence of an enormous mass of coins in the beds of the Tiber. During the dredging operations of the last decade about twelve hundred pieces a month were brought up to the surface by the dredgers. In desperate cases coins may have been thrown directly into the Tiber to prevent their falling a prey to the barbarians; but it is also possible that a fair percentage may have been washed down from the sewers into the bed of the river. . . .

Important discoveries are announced from the city of Fano, the ancient Fanum Fortunæ, on the coast of the Adriatic, between Pesaro and Sinigaglia. In the area of the ex-convent of St. Filippo, which is now being transformed into a municipal school, remains of a great public edifice have been brought to light, possibly of the Basilica, or court-house, described by the pseudo Vitruvius in the fifth book "*De Architectura*." Here, embedded in a wall of a much later age, several magnificent pieces of statuary have been discovered, representing members of the Julia gens, kinsmen of the founders of the empire. These statues were probably set up in the local Augusteum. — Rodolfo Lanciani in the *London Athenæum*.

BOOKS AND PAPERS.

THE ninth edition of Professor Baker's excellent "*Treatise on Masonry Construction*"¹ is before us. The work in its earlier editions has been noticed in these columns. This edition contains a considerable amount of new matter, the portion dealing with cement, in particular, having been considerably extended and much new material incorporated therein. It is impossible to write a work of this kind which will exactly fit all localities and conditions of buildings, but there is so much that is common practice throughout the length and breadth of this country and so much that is sound common sense where it is not actual practice, that this book offers most valuable reference for constructors of all sorts. We confess the practical part of it appeals to us more strongly than the theoretical. That is to say, the formulas, the purely hypothetical solutions of problems, seem of less real value than the citations from current practice and the formulation of actual business methods. It will never be possible to build in a scientifically accurate manner so long as we use materials so varying in their qualities and capacities as those with which we have to deal at present, and though some theories may sound very plausible, especially such as Professor Baker's analyses of that old, familiar subject, the strains in an arch, yet we doubt if any builder would place a great deal of reliance on any analysis of that sort and would prefer to trust entirely to results of practice. For example, it is doubtful if any of the Guastavino arches which have been used so plentifully during the past few years would theoretically even support themselves. On the other hand, it is doubtful if any architect would be content with the restricted dimensions which in theory would limit the size of *voussoirs* in an ordinary arch of stone-work. On the one hand, we have an extremely strong arch which is theoretically very weak, on the other hand, we are obliged, on account of appearance, to make an arch which of itself is ample, extravagantly heavy. But the solid meat in Professor Baker's book so far outweighs the pure theory that the most carping critic must admit that it is one of the best extant works upon the subject, one which the student, the architect and the constructor cannot afford to be without.

THE construction of tall chimneys is a subject which has been treated very generally in a discursive way, though there have been few publications, in complete form, on the subject. The latest work² is a very exhaustive treatise, going into all the details which would need to be observed in the construction of chimneys of various sorts. This is a department of building, or, perhaps more properly, engineering, which seldom comes within the scope of the architect's work; but when by any chance such a big chimney has to be built, it is well to know that there is so thorough a work upon the subject, giving such careful analyses of both the scientific and the practical side of the question. There are included also many descriptions of actual chimneys which have been built and are standing in use to-day, and after a perusal of the list of structures of this sort, the wonder grows, not that they can be built, but, rather, that it should be possible for human ingenuity to twist them about, straighten them out, or take them down, with such apparent ease. The highest chimney in the country is that of the Metropolitan Street Railway Company, in New York, which stands 353 above its foundation, with

¹ "*A Treatise on Masonry Construction*." By Ira O. Baker, C. E. Ninth Edition, Revised and Partially Rewritten. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1899. Price \$5.

² "*Chimney Design and Theory*." A book for Engineers and Architects. By William Wallace Christie. New York: D. Van Nostrand Company. 1899. Price \$3.

an internal diameter of 22 feet, being in that dimension the largest chimney in the world, though there are chimneys abroad which run between 450 and 500 feet high. That a structure of this kind could be safely tilted back after settling out of plumb, or could be taken down with accuracy and any safety to the surrounding neighborhood, speaks volumes for human ingenuity. Tall chimneys, however, the author does not consider in any sense necessary, but rather as monuments to the folly of the builders, and the claim is made that multiple chimneys, while not as imposing in appearance, give better results in use.

Beside the purely theoretical formulations with which the book bristles in spots, there are a number of very convenient and readily applied empirical methods stated, such as the handy rule that "the sectional area of the chimney in square feet should be equal to the number of pounds of fuel to be burned per minute"; or the rule as to wind-pressure, "Divide the square of the velocity in miles per hour by 200 to obtain the pressure in pounds per square foot." Then there is a carefully-considered chapter on steel chimneys, with theories pertaining to the same, and examples from existing structures; also a chapter on a subject which we do not remember ever to have seen treated before, that of house-chimneys, with some rules, which promise to be certainly on the side of safety, for determining the areas of flues for furnaces, hot-water boilers, etc. Also there are some very pertinent suggestions as to the method of building a chimney to avoid poor draughts, smoking, etc.; and, apropos, the statement is made that Count Rumford, who in the early days of this country gave the matter a great deal of study, actually prescribed for and cured more than 500 chimneys that had been given up as incurable.



THE T-SQUARE CLUB OF PHILADELPHIA.

THE monthly meeting of the T-Square Club was held on Wednesday evening, December 6, at which drawings were submitted for the Third Competition in the series of the Travelling Fellowship Programme. The subject was the "Elevations of a Semi-suburban Residence to be Characteristically Philadelphian in Treatment," and the designs were original and especially interesting as solutions of the problem of local expression in architecture. By judgment of the Club, the first place was awarded to Andrew I. Sauer; second to I. Edgar Hill; third to W. P. Trout.

On Monday evening, December 4, after the meeting of the Jury of Selection of the coming Exhibition, the visiting members — Mr. J. Randolph Coolidge, of Boston; Mr. Julius F. Harder, of New York; and Mr. John T. Comes, President of the Architectural Club of Pittsburgh — were the guests of the T-Square Club at a dinner given in the Club-house, at which Mr. Herbert G. Ripley, of Boston, was also present. The occasion was one to be remembered with pleasure by the Club.

The Annual Architectural Exhibition will be held at the Art Club from December 17, 1899, to January 6, 1900. The opening reception took place on Saturday evening, December 16.

ARTHUR S. BROOKE, Secretary.

OBITUARIES.

MR. F. F. HAMILTON who for the past twenty years has been associated with Mr. G. W. Percy under the firm name of Percy & Hamilton, architects, San Francisco, Cal., died on December 1, at his residence near Hayward after a short illness.

Mr. Hamilton, born in Maine, 1853, received his training in Boston, working in the offices of Gridley J. F. Bryant, Peabody & Stearns and others. Coming to the Pacific Coast in the seventies he was engaged for several years as draughtsman on the new City-hall of San Francisco. He entered, 1880, into partnership with Mr. Percy, and through his ability and indefatigability secured an equal share in the excellent reputation which his firm has enjoyed ever since. Among the earlier works of the firm may be mentioned the State Insane Asylum at Stockton and the Masonic Temple in the same city. In the last decade the success of the firm culminated in the erection of the Academy of Science, the new Wells, Fargo & Co. Building in San Francisco, and the museum, library and assembly-hall at the Stanford University, in Palo Alto. All these works are distinguished types of well-defined, substantial and practical architecture and will, for generations to come, do credit to the talent of the deceased. Personally, of a kind and genial disposition, Mr. Hamilton was equally liked in professional and social circles, and his many friends mourn his death as the loss of a good architect and man.

M. F.

AMOS S. WAGNER, a prominent architect of Williamsport, Pa., died at his home in that place on December 11, 1899, aged fifty-nine years.

CHICAGO'S WOODEN SIDEWALKS. — Chicago is going to banish wooden sidewalks by ordinance. As she has got 3,000 miles of them, the movement may be said to be as extensive as it is salutary and sensible. — *Boston Herald*.

ILLUSTRATIONS.

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE GARDEN FRONT: "WYNDHURST," HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Gelatine Print, issued with the International and Imperial Editions only.]

PROPOSED ST. PAUL'S CHURCH, FLATBUSH, LONG ISLAND, N. Y. MR. ALBERT E. PARFITT, ARCHITECT, BROOKLYN, N. Y.

THE NEW FRANKEL BUILDING, DES MOINES, IA. MESSRS. LIEBBE, NOURSE & RASMUSSEN, ARCHITECTS, DES MOINES, IA.

This building was begun last February and finished in July, at a cost including elevators, heating, plumbing, etc., of \$100,000.

BRUCE STREET PUBLIC SCHOOL BUILDING, NEWARK, N. J. MR. GUSTAVUS STAEHLIN, ARCHITECT, NEWARK, N. J.

PLANNED in accordance with the latest French requirements for school-houses as published in the *American Architect*, March 21, 1896, viz: —

Bi-lateral lighting for class-rooms over twenty-one feet wide — long axis running north-north-east — south-south-west, not varying forty degrees from north-south, necessitating isolation of class-rooms and limiting the number of stories — and shutting out north and south light; neither pupils nor teacher looking into the light.

These new French requirements are based mainly upon conclusions arrived at by a commission of scientific men appointed by the French Government to investigate the problem of lighting school-rooms. (Planat, 1882, Vol. I, p. 21, *Construction des Maisons d'Ecole*.) Among them were: —

Dr. Liebrich, ex-oculiste à Londres.

Dr. Gaveret, prof. de physique à la Faculté de médecine à Paris, inspecteur de l' instruction publique.

Dr. Javal, directeur du laboratoire d' ophtalmologie à la Sorbonne.

Dr. Panas, prof. d' ophtalmologie à Paris.

These gentlemen limited unilateral lighting to rooms of five metres in width, and stated that there was no scientific evidence produced before them to sustain the opinion that cross-light in rooms lighted bi-laterally affected the eyesight injuriously.

A COMPETITIVE DESIGN FOR THE ALBANY SAVINGS BANK, ALBANY, N. Y. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

[The following named illustration may be found by reference to our advertising pages.]

ELLINGTON PIANO FACTORY, CINCINNATI, O. MESSRS. ELZNER & ANDERSON, ARCHITECTS, CINCINNATI, O.

[Additional Illustrations in the International Edition.]

SOUTHWEST VIEW: HOUSE OF GIRAUD FOSTER, ESQ., LENOX, MASS. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

PORTICO OF THE SAME HOUSE.

[Gelatine Print.]

MONUMENT OF MORITZ, ELECTOR OF SAXONY, DRESDEN, SAXONY. [Gelatine Print.]

This peculiar monument, erected by Augustus, Elector of Saxony from 1553 to 1586, in remembrance of his illustrious brother, Elector Moritz, who, although victorious, was killed in 1553 in the Battle of Sievershausen, waged against Albrecht, Margrave of Brandenburg, presents itself as a remnant of its former more extensive appearance. When in 1811 the fortifications of the city of Dresden were demolished, it became necessary to move the monument, which occupied a prominent place in the old wall of the town, to a new locality, and it was then that portions of the original work were lost, or destroyed. The Tuscan architecture of the principal feature, with its peculiar two-fold entablature, is believed to be the work of, or, at least, to have been influenced by, Juan Maria Padovano, an Italian master stone-cutter, employed until 1555 on the new Electoral palace then in course of erection. Totally different in character from the architectural part of the monument is the sculptured work, which bears unmistakably the stamp of its Saxon origin, showing the hand of a skilled, but by no means eminent, master. The two statues represent Moritz of Saxony in the act of transferring the Electoral sword to his brother Augustus. In the background, behind Moritz, stands the grim figure of Death, holding up the hour-glass, while above the group the Holy Trinity, rather naively conceived, is seen. The central group of figures is flanked by the wives of the two princes. It is proposed to again move the monument to a new locality, the present site being required for a new street to be laid out for the embellishment of the old quarters of this interesting city.

ST. GABRIEL'S CHURCH, WARWICK Sq., LONDON, ENG. MESSRS. BAKER & TURKILL, ARCHITECTS.

NATIONAL PROVINCIAL BANK, PICCADILLY, LONDON, ENG. MR. ALFRED WATERHOUSE, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

"AN AWARD CRITICIZED."

December 18, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—May I add just a word to Mr. Hamlin's letter of December 6th? The fundamental error, and burden to the architectural profession, regarding competition is that the object of the competition is wrong.

As I read some time ago in a paper by Mr. John M. Carrère, architect, the object of competition should always be the selection of an architect rather than the choosing of a finished completed design.

The public will value the work of architects at precisely the same rate that architects themselves value it, and when such competitions as this under discussion are invited, the world of eager aspirants, most of them young in the profession, will, it is true, respond in such numbers as to bewilder the judges, and the public rating of the value and cost of architects' work goes down to the lowest mark possible.

The competition under discussion could readily have been reduced to less than one-half the cost and been quite as practical. Sixteenth-scale drawings for the plans good enough for first preliminaries. Suppose, further, they had been in lead pencil only (ink lines prohibited), and on thin sheets of tracing paper, by which the several stories can be quickly developed one from the other—the architect to show his brains therein rather than his fine drawing; sections omitted—rarely ever essential, for height of stories can be readily shown at one side of an elevation or plan; one perspective or two elevations—surely both not necessary—and in this let the architect be permitted to beautify and bring out his architectural features; elaboration to be restricted to this one drawing only—all other drawings in lead pencil on thin paper.

Such monstrous formulas of competition as the New Haven Y. M. C. A., followed by the Scranton Y. M. C. A., perhaps do some good in the disgust for all competition which follows the heavy losses they entail among architects, but with the public, as I have said, they advertise architects' time and work as not worth much, and new invitations on similar lines follow.

How many of them sent me the past year have I tossed in the waste-paper basket!

Two of them, I remember, called for $\frac{1}{4}$ scale drawings. Some of them were important works that would have been a keen temptation to any architect, if only he could enter his ideas in the contest on a rational basis. Respectfully yours, A. B. JENNINGS.

NON-ABSORBENT FLOORS FOR HOSPITALS.

KNOXVILLE, TENN., December 14, 1899.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I am engaged in preparing plans for a small hospital, and in the operating-room we want a floor that will not absorb anything whatever in the way of moisture. I have been instructed by the committee to lay this floor in vitrified tile, or glazed tile, in order that it may not absorb moisture, but at the same time there is a small joint in it that even being filled with Portland cement will absorb more or less. Is there to your knowledge a wash, or an enamel, that could be used to finish over a cement floor that would render it non-absorbent? Any information on this point will be gratefully received. Yours respectfully, GEO. F. BARBER & Co.

[PORTLAND cement, when well hardened, is not very absorbent. In fact, a surface entirely of Portland cement is often used in hospitals, and would be satisfactory if it were not for its tendency, in large areas, to shrink and crack. In the present case, it might be advantageous to saturate the joints, while the cement is fresh, with a strong solution of silicate of soda. This will hasten the hardening, besides filling the pores to a certain extent. Do not be persuaded to rub the joints with linseed-oil, or to mix linseed-oil with the cement. This, if done before the cement is thoroughly hardened, will make the surface chip off, leaving the joints hollow. — EDS. AMERICAN ARCHITECT.]

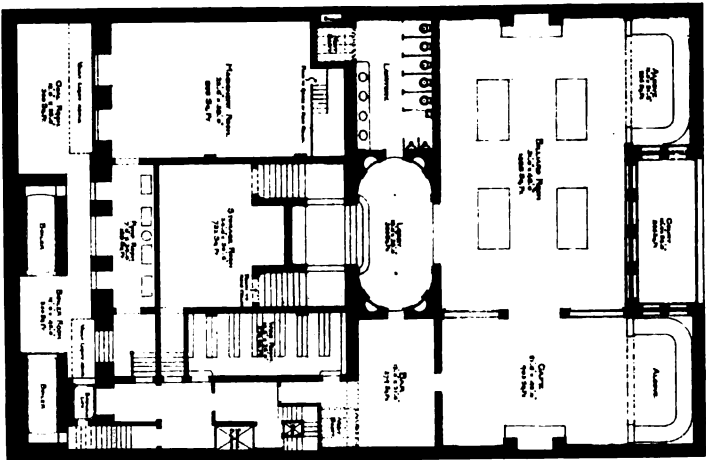
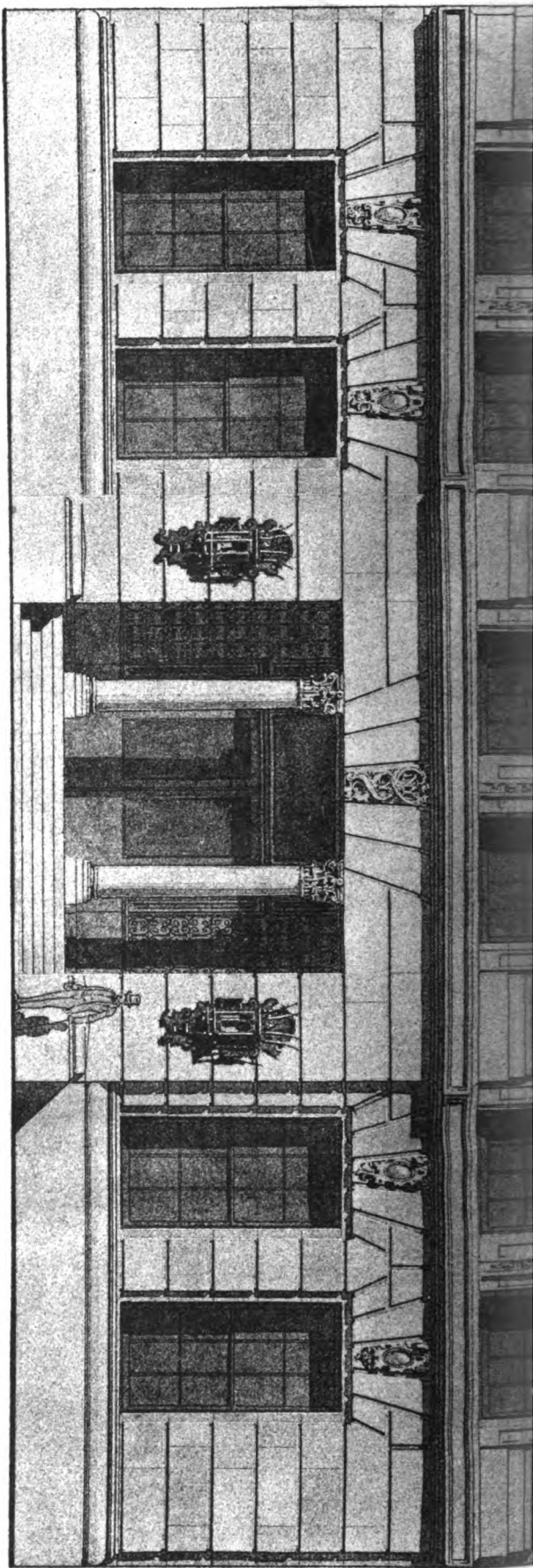


"THE HOLY DOOR OF ST. PETER'S."—Interesting particulars are given by the Rome correspondent of the London *Morning Post* of the ceremony by which the Holy Year 1900 will be inaugurated at midday on December 24 next—namely, the opening of the "Porta Santa," or holy door of St. Peter's by the Pope himself. The basilica of St. Peter's will be completely closed to the public and to ecclesiastics, only the portico remaining at the disposition of the Papal Court and of a few privileged sightseers. The door will be sawn through on the inside, and placed in an iron and wooden clamp. The Pope will strike the wall thrice with a golden mallet, and then return to the throne. The door will then be lowered by means of pulleys, and placed on a car specially prepared, and carried away for preservation until the end of the year.

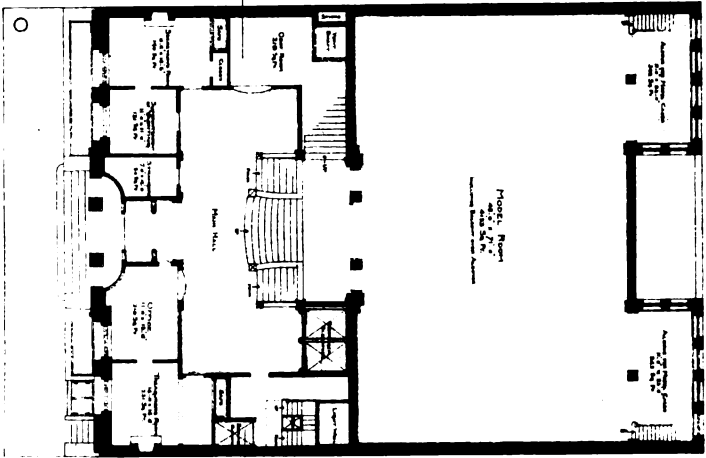
A NEW READING OF THE MERCHANT OF VENICE.—Trouble has arisen between the families of Louis Schwartz, of 31 Stevens Avenue, Jersey City, and Mrs. Josephine Miller, who lives next door. Mrs. Miller owns 29 and 27. In the latter lived a family named Bolte. They moved a short time ago. Mr. Bolte presented a number of plants growing in the yard to Mr. Schwartz. When he removed them Mrs. Miller notified him, so he alleges, that if he removed any of the soil clinging to the roots of the plants, she would prosecute him. He paid no attention to her. On the following day he was notified by Mrs. Miller's lawyer that if he trespassed further upon her property suit would be brought at once. Mr. Schwartz considered the matter. He took note of the fact that his house was several feet from the edge of his lot, and that there was a large and pleasant window in the side of Mrs. Miller's house. He decided to build a fence on his spare space. This he did, making the fence 20 feet high. This greatly interfered with the view from Mrs. Miller's window. To make the fence more objectionable, as he admits, Mr. Schwartz covered the side facing Mrs. Miller's premises with black tar paper. — *N. Y. Times*.

A LOCKLESS NEW JERSEY CANAL.—Running from Phillipsburg, N. J., to Newark, N. J., there is a canal that is in many respects the most remarkable in existence. It is sixty miles long, and was in operation in New Jersey before a railroad existed in the State. It runs in many cases side by side with the Lackawanna Railroad, and furnishes the most striking example of the difference between the old-time and modern methods of freight transportation that can be seen. Its most remarkable feature is that in place of the lock system in use on canals the boats are drawn up and down elevations on great cars with high sides and open ends on a track 18 feet wide. These are the original "cable-cars." The principle by which they are operated, the endless cable, is exactly the same as that which was utilized for operating cable-cars in cities. This method of transportation has been in use on the Morris Canal for half a century, and antedates the introduction of cable-cars by at least thirty-five years. The unusual features of the canal are most in evidence between Boonton and Montville, N. J. An interesting feature in connection with the Morris Canal is that this is likely to be the last year of its operation, as an effort will be made at the next session of the New Jersey Legislature to secure it as a means of furnishing Jersey City with additional water-supply. — *Boston Transcript*.

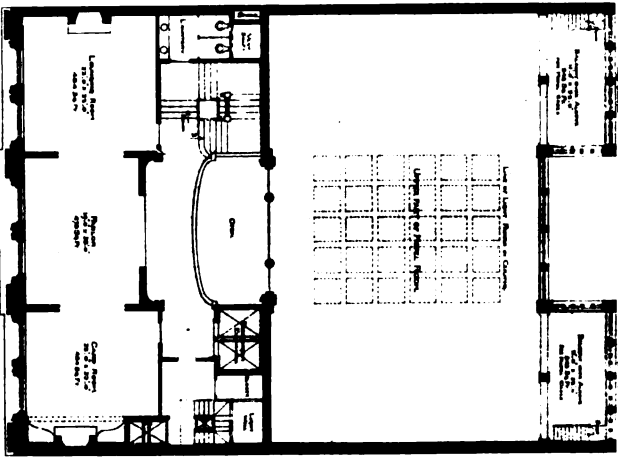
THE ROWTON HOUSES, LONDON.—Philanthropy and municipal statesmanship have undertaken to solve the problem of the housing of the poor in large cities, but the most satisfactory results have been secured by a purely commercial enterprise. Rowton Houses, Limited, was organized in 1894 with a capital of \$250,000, after the first of the "poor men's hotels" had been opened at Vauxhall, with 475 cubicles or rooms for lodgers. The second Rowton House was completed and set in operation during the following year in King's Cross Road, with accommodations for 677 lodgers. The third Rowton House was opened two years ago at Newington Butts, in the southeastern section of London, with 805 sleeping-rooms. The fourth hotel for poor men will be in operation this month at Hammersmith, with 800 rooms, and a site has been obtained in Whitechapel, near St. Mary's Church, for the erection of another Rowton House, with equal accommodations. When the two new hotels are opened there will be over thirty-five hundred sixpenny lodgers, and the stockholders will receive a dividend of 5 per cent on their investment for the housing of the poor. . . . These hotels are filled as soon as they are opened, and from 80 to 90 per cent are permanent lodgers, who sleep every night in the cubicles. The gates are opened at 7.15 o'clock in the evening for the earliest applicants, who are generally marketmen and news-venders, with early hours for rising and breakfasting. Every quarter-hour brings a fresh relay of lodgers, until at 9 o'clock every room is occupied and applicants have to be turned away. It is a motley assemblage of working people, with not a few broken-down professional men reduced to the pittance of a shilling or eighteen pence a day. Some of the lodgers who grill their own chops in the scullery have had a university education and can quote Horace's Odes or early English poetry when they are chatting together over their pipes in the smoking room. There are no tramps, for the sixpence toll keeps them out, and there are few intemperate men, for no liquor is sold at the bar and habitual toppers are not attracted. The lodgers soon find their mates, and entertain one another in their own way. In a real sense the poor men's hotel is a club-house, where the lodgers can read, write, talk or smoke, and have the companionship of men of their own sort. They enjoy all these privileges at a net cost of from fourteen to nineteen pence a day, and the shareholders receive 5 per cent on their investment. The London County Council, having schemes of its own for improving the housing of the poor, has been jealous of the success of the Rowton Houses. The management has met with resistance from the local authorities at every turn. The building-laws have been rigorously enforced, and the sanitary plumbing has been critically examined. Additional safeguards against fire have been required, and the company has been harassed in many ways. Not long ago a determined but unsuccessful effort was made by the County Council to bring the Rowton Houses under official control and supervision as common lodging-houses, and thereby to discredit them. This opposition from municipal reformers has served to emphasize the fact that a private company, working on commercial lines and without affecting any pretensions of philanthropy or public obligation, had succeeded in proving that poor men's hotels could be built and operated at a profit of 5 per cent on the capital invested. Neither charity nor municipal enterprise has done as well in London as this company in ministering to the comfort and welfare of workingmen. It has not yet taken up the experiment of building similar hotels for women, but it has pointed out practical methods by which the social condition of working people can be elevated without expense to taxpayers or philanthropists, and with a good return for the investors' money. — *I. N. Ford, in the N. Y. Tribune*.



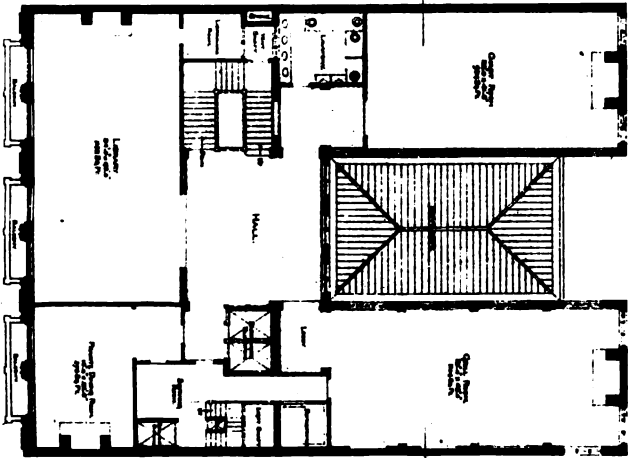
Basement Plan.



First Floor



Second Floor



Third Floor

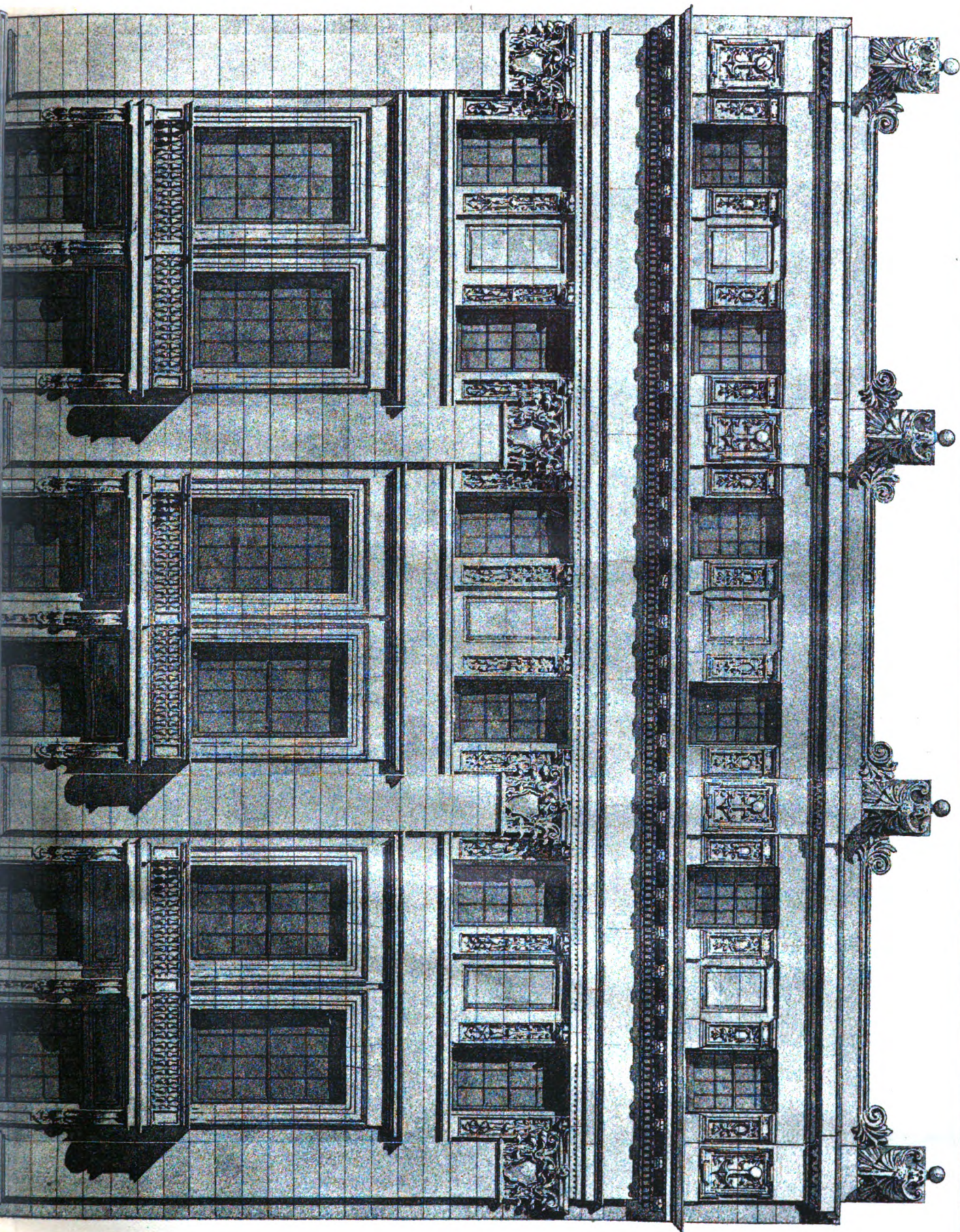
A COMPETITIVE DESIGN FOR CLUB HOUSE OF THE NEW YORK YACHT CLUB.
R. H. ROBERTSON, ARCHITECT.

EXHIBIT 100000 01-100000

AMERICAN ARCHITECT AND BUILDING NEWS, Dec. 30, 1899.

DESIGNED BY THE AMERICAN ARCHITECT AND BUILDING NEWS CO.

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DECEMBER 30, 1899.

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The New York "Box-stoop"—VI: No. 11 East 68th St.
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WITH this issue we close the career—a useful and meritorious career, we hope—of our "Imperial" edition, and must make a last request to those who have subscribed to it until now to notify us promptly as to whether it is their wish to be transferred to our "International" or to our "Regular" list for the ensuing year. We recognize the possibility that some of those who have not already notified us as to their wishes hesitate to subscribe to the "International" edition through unwillingness to make an immediate remittance for a larger sum than usual, just at the time when annual and quarterly accounts are falling due. To all such old subscribers we are willing to extend all reasonable indulgence. Our immediate desire is to be instructed as to how we are expected to serve them next year. We hope it may not be held unmanly if we point out that the sacrifice we now make is in the interest of our subscribers, and very possibly deserves some similar sacrifice on their part; and that, although sixteen dollars is still a considerable sum to pay for a subscription to a periodical, the only way to assure a further reduction is to give us so hearty a support at the present rate as to make such further reduction a possibility. It is the most elementary principle of manufacturing that the greater the output the less will be the actual and relative cost of each manufactured unit—in our case the fifty-two copies which reach each subscriber.

A LETTER to the New York *Evening Post* repeats a suggestion which we made several years ago, that, in view of the enormous losses which this country suffers from fire, and the necessity for the adoption of some self-enforcing measure for diminishing these losses, it would be well for our States to enact laws similar to those of France, Italy and other Continental countries, by which the owner of a building on which a preventable fire originates shall be held responsible for losses to his neighbors caused by the spread of the fire beyond his own premises. Although this seems to us a radical and dangerous innovation, it is interesting to recall that the English common law held every man liable, as a matter of course, for fires spreading from his own to his neighbor's property, until about the time of the settlement of the American Colonies, when an Act of Parliament expressly relieved house-owners and tenants from this liability. Under the rule that the statute law of England became the common law of this country after the establishment of our independence, the rule in the United States became the same as that of England, although, simply as a matter of theory, the Continental view, that a man is under just as much obligation to protect his neighbors from suffering through his defective flues or wooden ash-barrels as he is to keep his dogs or cattle from injuring people, is certainly more logical than the other. Now, however, the fact that we spend on fires and insurance enough money to build a new navy every year, or to pay all our naval and military expenses, including pensions, or to provide every family in the United States with

eight pairs of shoes annually, or, if preferred, with a barrel of flour every four months, is beginning to attract the attention of other people besides insurance-men and architects, and the sooner the newspaper writers who berate the latter for not compelling every one to build houses as secure against fire as those on the Continent are brought to perceive the connection between the Continental laws of fire-liability and the precautions which are taken to diminish that liability, the more quickly will the discussion of the matter reach a rational basis. As a matter of fact, the liability to neighbors is not felt as a burden on the Continent, for the reason that the insurance policy covers that, as well as the direct loss, at a small additional premium, but it serves as a steady incentive to sound and safe building, and in that way has saved incalculable millions to the countries in which it prevails. We, architects, are continually told that our French, German and Italian brethren understand incombustible building far better than we do, and that, if we would only learn of them, our buildings would be as safe as theirs; whereas the truth is that American architects understand fire-resisting construction better than any others in the world; that nearly every device in use for making buildings more fireproof, at small expense, such as plank flooring, metal lathing, combined concrete and metal construction, and terracotta protection to columns and girders, originated in this country; and that, while American fireproof buildings are far superior to anything of the kind to be found elsewhere, American architects, like all others, must build to suit their clients, and until it is for the interest of their clients to take precautions against fire, architects can do nothing except to make suggestions and recommendations, which, as a rule, they do conscientiously.

THERE is serious delay in the construction of the new wing of the Metropolitan Museum, on account of a strike of the granite-cutters, carpenters, stone-masons and painters, who have left their work because non-union men are employed by the iron contractors, Messrs. J. B. & J. M. Cornell. An attempt was made, some months ago, to compel the Cornell workmen to join a union connected with the Building Trades' Council, and the strike, which extends to several other large buildings on which the Cornell firm has contracts, is said to have been ordered by the managers of the Building Trades' Council. A report, of the truth of which we do not pretend to judge, is current, to the effect that the strike was secretly instigated by certain rival iron contractors, who would like to see the Cornell firm crippled or driven out of business; and the possibility that strikes may be occasionally brought about in this way adds new and great risks to the business of building contractors. Strikes are bad enough, and sympathetic strikes are the worst of their kind, but sympathetic strikes brought about by rich contractors, plotting with the so-called labor leaders to ruin a rival at the expense of the poor workmen who obediently deprive themselves and their families of bread at the order of corrupt and perfidious representatives, would indicate a depth of depravity from which even the consciences of Trusts might recoil.

THE National Sculpture Society has been amusing itself, as well as practising a useful exercise, in considering schemes for beautifying different portions of New York. The suggestions made already include a column in Battery Park, to commemorate anything suitable; an "architectural bas-relief," to be placed at the end of the building at the junction of Clinton Street and Astor Place; a "sort of semicircular coliseum" at the north end of Union Square, and the razing of all the buildings in City-hall Park except the City-hall itself. It is extremely unlikely that any of these plans will be carried out, but the habit of considering open spaces in cities as subjects for artistic treatment is one that it is desirable to cultivate.

HISTORY tells us that the finest architectural compositions of this sort in Rome, that is, in the world, were the work of private individuals, who devoted a part of their enormous wealth to buying land, and laying out, at their own expense, long and wide open spaces, or forums, to facilitate business or traffic, lining them with colonnades, temples, basilicas and other structures for the use of the public. In this way were secured artistic effects, as well as public improvements, which would never have been carried out at the public expense, and

in this way, as it seems to us, similar effects will have to be secured here. While our public treasury is richer, and our citizens less rich, than was the case in Rome, and anything like the destruction, for art's sake, of the buildings in City-hall Park is out of the question, on account of the sacrifice of property involved, we have among us many individuals who could easily spare a million or two for the embellishment of some public place, with which their names might be connected, as those of Trajan, or Augustus, or Julius Cæsar, or Paulus Æmilius, are with the forums or public buildings which they, or their families, presented to the community.

TO suggest a practicable example; the Boston Museum of Fine-Arts has purchased a tract of land bordering for about four hundred feet on the Huntington Entrance to the Back Bay Park. This Huntington Entrance is itself an elongated park, with sides nearly parallel, and two roadways. Between the roadways appears a portion of the river which runs through the Fens, the channel having its sides thickly planted with shrubbery, and being spanned by a handsome bridge at the point where the Entrance meets the Fenway, or main drive encircling the Park. Every architect's knowledge of artistic history will supply him with precedents for a magnificent treatment of these conditions. Supposing the Museum of Fine-Arts, or one of its benefactors, to provide for adorning the front of its new building toward the Huntington Entrance with a colonnade, something like those of the new Fine-Art buildings in Paris, and imagining, also, that some club, or society, or even a group of private owners, should provide for a corresponding colonnade fronting on the other side of the Entrance, the most important part of a splendid architectural composition would have been secured. There should be little difficulty, even under present conditions, in arranging for something of this kind. A colonnaded front for the new Museum of Fine-Arts would commend itself to every one interested in the building, and no one is more likely than the average citizen of Boston to be willing to submit, for the common benefit, to restrictions such as those which have made the block of houses on the corner of the Place de la Concorde and the Rue Royale, balancing the Ministère de la Marine, one of the most imposing constructions in Europe. With the sides of the Huntington Entrance thus provided for, the middle portion could be devoted to the highest class of art. For example, the centre would afford a position of unrivalled dignity for a great obelisk, or column, standing on a plinth ornamented with statuary; or the sides of the roadways opposite the buildings might be lined with groups of sculpture on plinths of the same general character; or one or more monumental fountains might be arranged, overflowing into the river beneath. It has been shown many times that where suitable places, which, so to speak, invite decoration, are provided in our cities, there are plenty of people who are ready to contribute money for their adornment; and, if the matter is taken up in time, those who take pleasure in beautiful cities may, for once, enjoy the satisfaction of seeing a portion of an American town ornamented with works of art which are not dropped in corners behind bushes, or balanced uneasily on a paving-stone in the middle of a street, or lodged on the steps of a Government office, because there is no other place to put them.

AN interesting experiment was recently made with wood pavement in the city of Ipswich, in England. The streets of the town are narrow, and are subjected to heavy traffic, so that a good pavement is necessary. Until recently, a surface of granite macadam was used, but the laying of street-railway tracks in the principal thoroughfares made a change necessary, and it was decided to try wood blocks. It is usual now everywhere in England to lay wood-block pavement on a layer of concrete, thick enough to form a bed which will not yield under any traffic, so that the wood is simply a surface material, but the Ipswich authorities imagined, or were told, that it would be better to make the wood blocks deeper, and lay them on a bed of gravel, so that water soaking through the blocks would drain away, without accumulating and rotting the lower end of the blocks; and, as an experiment, a portion of the pavement was laid in this way. It proved, however, that instead of draining the pavement, the gravel permitted the passage of moist air from below, which soon rotted the lower portion of the blocks, and destroyed the work. Where concrete was used, it was laid about three inches thick, and proved strong enough to support the traffic. A concrete made

with lime was at first tried, but soon abandoned, a very rich Portland-cement concrete being used in all subsequent work. It may be observed that the concrete layer must have a very solid and uniform subsoil to enable it to resist heavy traffic. In London, wood pavement is generally laid over a sheet of concrete about twelve inches thick, and, as the integrity of the pavement is dependent upon that of its concrete foundation, there are few places where six or eight inches, at least, would not be necessary. However, the Ipswich pavement has stood well for about ten years, and creosoted blocks, such as are now used in new pavements, will, it is thought, endure for at least fifteen years.

SANITARIANS will find some amusement, if not instruction, in the consular report, just issued from the Bureau of Foreign Commerce at Washington, on the "Disposal of Sewage and Garbage in Foreign Countries." It is hardly necessary to say that in a large proportion of the towns in which the United States is represented by a consul the system of garbage removal is one dependent entirely on animated agents, and of these there is, it appears, a variety which will surprise the reader. In Maracaibo, Venezuela, a city of fifty thousand inhabitants, we are told that "until lately, swine and goats were the street-cleaners;" in China, "the garbage collector is the dog or the starving beggar," and in many places, particularly in South and Central America and the West Indies, "crows, vultures and buzzards" are the only creatures that take any interest in the removal of decomposing animal matter. There is, however, it seems, something to be learned in stimulating the activity of these agents, and a hint from Santiago de Cuba may be useful. In that delightful town, as it existed, we must remember, before the American occupation, it was the custom to drag dead cattle, horses, mules and large dogs to the suburbs, and leave them by the roadside. Small animals, such as cats, and dogs of lesser size, and other garbage, were "thrown into the streets, or on a neighbor's roof, to be devoured by buzzards;" but, as "neighbors" seem occasionally to have objected to the deposit of such objects on their roofs, and as the sight of the buzzards devouring their pet kitty beside the front door is not agreeable to all persons, the more squeamish inhabitants devised a very ingenious plan. Before placing the deceased Ponto or Minette on the sidewalk, it is "customary," as we are told, "to tie a cord to the tail of the animal." The average sanitarian would be puzzled to understand how this would promote its proper disposition; but it seems that the children of the neighborhood, seeing such tempting facilities ready to their hand, "play horse" with the corpse, by dragging it around the streets, and, as they "seldom deliver it again to the owners," the latter have no further trouble with it.

CHINA, however, stands first for the incredible foulness of its cities and their inhabitants. The consul at Chefoo, Mr. Fowler, writes that in the centre of the two cities reputed to be the cleanest in China he had himself seen cholera corpses decomposing, dogs eating the bodies of babies, and snakes crawling about among the masses of filth of every kind. In Pekin, with a population of at least a million, a "combined system," as the consul sarcastically observes, is employed for disposing of wastes; that is, everything combines in the streets. The liquid portions are collected in pools at the sides, from which they are thrown at intervals, with long-handled ladles, on the streets, including the passers-by. As the mud formed in this way has a high fertilizing value, it is collected by men and boys, made into cakes of the size of an orange, dried in the sun in some open place, preferably, it seems, the neighborhood of the foreign legations, and sold to farmers. An annual appropriation of three hundred thousand dollars in gold is made for removing refuse, but, as Consul Ragsdale observes, "This sum about covers the office expenses." It is a pleasure to turn from these horrible places to Montevideo, in Uruguay, which, although it has a population of two hundred and fifty thousand, is said to have the lowest death-rate of any city of its size in the world. The greater part of the town is drained by a modern system of sewerage into the River Plate; the streets are well paved, and are swept every night, and all garbage and household refuse is carried away at night, or early in the morning, and dumped about five miles from the city. No use has yet been made of this refuse, but a French company has made a proposal for the erection of modern utilization works.

COMPETITIONS.¹

IT is generally agreed that whenever it is practicable to appoint the architect of any building, public or private, outright, it is best to do so. For this is not practicable unless there is a consensus of opinion on the part of the owners or their representatives upon some one practitioner, and such unanimity affords fair presumptive evidence of the fitness of the appointment. Direct appointment, moreover, insures an intelligent understanding between architects and their clients from the very beginning of the work, the time when such relations are most important. In competitions a great gulf is fixed between an architect and his client, such understandings are impossible, and misunderstandings are likely to occur. Even the most elaborate programme must leave many questions unanswered, and the most carefully prepared instructions will admit of more than one interpretation. Moreover they necessarily leave the prejudices and preferences of the owners unexplained. The competitor must proceed in ignorance of the determining conditions of success, and work blindly and at haphazard. What is still more distasteful is this, that it must be his chief care, as a matter of business, to present not so much the best solution of the problem in hand as the one that will best meet the predilections of his clients or of a jury, or what he fancies to be such, his immediate object being not to do the best thing, but to secure the work, not to do what he thinks best but what he thinks other people will think best. This puts him into false and uncomfortable relations both to the work and to his clients, and he hates it. Add to this the knowledge that his work will probably all be thrown away and the job be given to somebody else, more skilful or more fortunate than himself, and we need not wonder that men go into competitions in a half-hearted way, and are disposed to put into them only half their mind. It naturally happens accordingly that the problem often fails to engage the eager attention and serious study needed for its successful solution, and that the work is turned over to draughtsmen to make out of it what they can. Under these circumstances, a false start is likely to be made through failure really to understand and grasp the problem, and a poor result is apt to ensue through indifference or preoccupation of mind.

Competitions also in their very nature involve a great waste of time and money, since the labor of all the competitors but one is without practical results. The waste is the same whether, as in paid competitions, the loss falls upon the owners, or, as in an unpaid competition, upon the profession. Every competition, if at all extensive, costs the profession hundreds and thousands of dollars, most of which falls upon men who can ill afford the loss. It is cruel and heart-breaking, when fifty or a hundred sets of drawings are submitted for judgment, to consider that in all but one the laborers have labored in vain, and that out of all the schemes only half a dozen can possibly receive any serious consideration. Even in paid competitions, in the absence of anything to keep the expenses within the limit of the payment, the waste is sometimes equally appalling. Thus the profession groans and travails night and day, year in and year out, under the strain of sacrifices it can ill afford to make. No wonder that the system has come to be regarded as a sort of nightmare, as an incubus or vampire, stifling the breath of professional life, and draining its blood. No wonder that architects extol the system of direct appointment, under which they can set to work promptly, without spending time and money in ill-advised endeavors, and can address themselves at once, intelligently and sincerely, to the real task to be performed.

But the conditions which make a direct appointment possible cannot always be fulfilled. They are indeed seldom to be met with, except in purely private undertakings. A single owner may presumably have a distinct personal preference for a particular practitioner, an arbitrary and unintelligent preference perhaps, but still a preference. But among half a dozen proprietors there is very little chance of all having the same. The probability is that they will not be able to agree whom to employ. In the case of public work also it may be considered impolitic or improper, as having a color of favoritism, to appoint an architect outright. A competition of some sort is then inevitable, and it must be accepted with all its disadvantages.

Much may be done, however, to diminish the gravity of these disadvantages. The work done in drawing up the instructions for a competition, involving, as it must, a tentative study of the problem in hand, will often largely take the place of the preliminary consultations between the architect of a building and its owners. Limiting the number of competitors and paying them properly, even handsomely, for their work, will encourage them to do their best. The enormous waste of money and time and labor that competitions often involve can in a large measure be avoided by excluding splendor of draughtsmanship and limiting the size and number of the drawings asked for. It is not necessary for the purpose in hand that these drawings should make a complete exposition of the several schemes submitted. It suffices if they indicate the distinctive points in each, so that an intelligent choice may be made among them.

Since, then, competitions cannot be entirely got rid of, it is worth while to point out not only that the evils attending them may thus be greatly alleviated, as experience has shown, but that the method of getting the building one wants by comparison and selection among a number of possibilities is not without positive advantages. Choice and selection are habitually employed in the sale and purchase of all other works of taste and skill, whether in the decorative or in the

fine arts, and they may well be equally serviceable in architecture, both to the community and the profession.

In the first place, competitions naturally tend to reduce to a minimum the evils which are inherent in the other system. For the custom of appointing the architect of a building outright is not without its own disadvantages, as may be witnessed in the undesirable structures which architects constantly erect in the freedom of private practice, unchecked by the wholesome hindrances that a competition imposes. It must not be supposed that the owner is always to blame for the unhappy things that not infrequently meet the eye in town and country. Sometimes, indeed, owners distinctly prefer ugly things. But quite as often they are helpless victims, and patiently submit to the caprices of their professional adviser, under the impression that he doubtless knows his business and is conducting it in accordance with the rules of his art. This would seem to betray an unexpected and almost scriptural meekness in the men who inherit the earth.

It is sometimes indeed assumed that all that is needed to secure a good building is the employment of a reputable practitioner. But this is not so. Even the best and the best esteemed of men are likely to do most ill-advised things. Such is the intrinsic difficulty of the architect's task, and so impossible is it for even the best trained and the best endowed men to be always at the height of their powers, that there is no telling what they will not do when entrusted with an open commission. When one wants to have a landscape by a painter of note, he generally waits until it is done before he buys it. If he is so rash as to order it in advance, he takes the risk of having to put up with what the dealers call an inferior work of the master. But he is not obliged to hang his picture. The owners of real estate have no such resource. They have to order their building beforehand, and when it is done it cannot be hid. The only choice a client has lies among the various suggestions of his chosen adviser, and these he is not generally in a position materially to influence. He does not find out what he really wants until it is too late to say. This consideration may well make him cautious, and dispose him to assume all the trouble and expense of a competition, rather than enter blindly upon a course which he can neither direct at the beginning nor control at the end. A competition will at least give him some choice of advisers, and prevent his committing himself to any of them until he knows what they are proposing to give him. It may then happen, and sometimes does, that the happy inspiration of a young or little-known architect will be more to his purpose, and be really better than the suggestions of older and even abler men. A competition enables him to secure the good and escape the bad.

In theory, of course, it is the duty of an architect, and his delight, to discover all the practicable solutions of his problem, and if there is more than one of real promise, to let his client choose among them. But, in fact, no man can command the time for this, even if he has the energy and personal resources. Days are not long enough to do business in this fashion. What generally happens is that, among the two or three solutions that first occur to him, the architect selects the one that best suits his own turn of mind and imposes it upon his client. The only way his client can really get a choice between different schemes is by employing different men to get them up. At any rate, this is the only way of making sure that they shall be really different, not merely variations of one theme, or different airs pitched to the same key, as the varying suggestions of the same mind can hardly fail to be.

From these risks and uncertainties competitions are a great protection. There is, of course, an element of precariousness in all enterprises, but there is no undertaking in which the results of a mistake is more serious, or in general more irremediable, than in building, or in which they involve a greater misappropriation of capital. There is nowhere greater need of using every known precaution.

The discussions and comparisons which a competition involves would also seem to offer the only chance of efficient and serviceable criticism that the design for a building can obtain. For they come at the moment when the scheme is substantially completed and before it is put in execution. After a building is up, discussion of its merits and defects, however edifying, is of but little practical service. It is only indirectly and remotely applicable to any future work, so much do conditions differ, and for the service of the work in hand, pointing out radical errors in a design is merely obstructive unless there are alternative designs to which to turn. These, a competition provides, and it subjects all the designs to an examination that is both seasonable and effective. The successful one is tested by the most exacting and pertinent of tests, a comparison with other designs of exactly its own kind. The unsuccessful designs suffer no reproach, or suffer it in good company, even though many of them are consigned to a not undeserved oblivion. It has often been said that in every Department of Public Works there might well be a sort of Censor, or Aedile, or a Committee, to pass upon the designs of buildings proposed for erection, and in fact the Department of Public Works in New York has sometimes taken this course, inviting experts to pass upon the designs made for city buildings. Buildings erected from designs submitted in competition hardly require such an imprimatur.

Architects generally dislike competitions and deprecate the system. For the pangs of disappointed expectation are more poignant and are longer remembered than the satisfactions of success, and they

¹ A paper by Prof. William R. Ware, read at the Thirty-third Annual Convention of the American Institute of Architects at Pittsburgh, November 16, 1899.

seem more uncalled for. Indeed success always appears to the winner to come quite in the order of nature. That the general voice of the profession should be raised against them is indeed inevitable, by the mere doctrine of chances. Just as, after an election, there are always more people gratified than disappointed, so after a competition there are necessarily many more people disappointed than gratified. Only the winner is satisfied with the way the system works, and even he is not eager to risk it again. This is part of the situation, and of course, except for the joy of contention, which does not count for much, one would always rather have work given into his hands outright, in recognition of his deserts, than to have to prove his claims every time. It seems a more satisfactory system. All this is natural enough. The fact that nobody likes competitions may accordingly be discounted. It signifies nothing. It is no proof that they are not a good thing for the client, for the community, and even for architects themselves.

But the reasons given for this antipathy will not always bear examination. It is sometimes said, for instance, that men work better in the calm and serenity of a sure thing than under the anxiety and restraint of these contentions. But this is not always so. They certainly work more comfortably, for, as was said at the beginning, nothing is so uncomfortable as to work in the dark, as in competition work one is in great part obliged to do. But it is to be noticed that this is only a temporary evil, and so to speak, a superfluous one. It only defers more satisfactory relations; it does not replace them. When the competition is over, the way is clear to establish more intimate and more personal intercourse. The competition has done no harm. It is at most only a disagreeable episode. Many men, moreover, are so constituted that competition acts upon them as a stimulant, and many architects' best work is accordingly to be seen in buildings that have come to them in this way. This would, indeed, follow naturally from the fact that in their private practice there is, as has been said, hardly anything to prevent their giving a permanent form to any chance creation of their fancy, while in a competition their less happy inspirations never see the light. Thus even if competition does not always spur a man to do his best work, it at any rate effectually prevents him from doing his worst. No one can have much to do with competitions without being impressed by the fact that it would have been a public calamity if many of the rejected designs, even those sent in under notable names, had been carried into execution. But he also perceives that if the friend or patron who obtained for its author a place among the competitors had chanced to be a person of sufficient influence to secure his appointment outright, any one of them might have been selected and erected. Hence, an impartial and competent judge, or jury, is as important for the interests of the owners and of the public as for those of the competitors.

The objection that competitions interrupt the regular course of business, and that they involve a great expenditure of time and money, for which there is very little chance of receiving any equivalent, is better founded, in fact and in reason. But if, as can be done and has been done, the work asked for is restricted to sketches, these evils will, as has been said, for the most part, disappear. Less time is taken up and less money is spent; so little that the owners can afford to make ample requital. Whether they institute an open, closed, or mixed competition, the owners should always spend enough money upon it fully to compensate the competitors, or the chief part of them, for their actual pecuniary outlay.

These objections are also offset by the personal advantage which an architect gains by extending in this way the range of his business acquaintance and professional experience. Even a large practice is apt to run in a narrow channel. Every architect would like to expatiate into untried fields, and thus not only to keep himself in training, but to prepare in advance for other kinds of work, should they ever come to him. But to make studies for a theatre, let us say, or for a large library, would take all his leisure for a twelve-month if he undertook it alone, and would cost more than he might care to spend if he employed his draughtsman upon it. A competition for such a building, however, will give him just what he is wanting, and at other people's expense, with the added advantage of having a real, instead of merely an academic, problem to practise his wits upon. More than one architect has owed his success in important work to the skill and courage acquired in such rehearsals.

The lessons that one draws from his own practical experience are indeed of more value than any such studies can be, since they teach what nothing else will. But practical experience keeps not only a dear school, as Poor Richard has said, but a slow one. Life is too short to learn everything in that way. Most things must be learned not by work, but by study. I think that an architect may well regard competitions in this light, as a sort of post-graduate schooling for the furthering and perfecting of his academic training, and that he need not be too anxious either to win the prize or to be paid for his labor.

The habit of taking part even in public and unpaid competitions is accordingly as helpful a one as a young architect can form, if he can afford to indulge it. It gives him an opportunity not only of enlarging his professional experience, but of keeping up and extending his studies. This consideration alone is a sufficient reason for encouraging the institution of open competitions for the classes of buildings to which they are adapted, for it is in the interests of the community that the younger men in any profession should have every oppor-

tunity of improving their professional status. In them lies the hope of the future. Everything should be done to make public competitions attractive to them, and this is an additional and a conclusive reason for requiring in such competitions only a moderate expenditure of time and money.

But though most architects dream of a time when there shall be a steady demand for all the work they can supply, so that they shall not be obliged to contend in this way for the chance of employment, it is to be noticed that even with many of the best patronized and busiest among them, their aversion to competitions is rather speculative than actual, and that they willingly take part in them when the importance and the engaging character of the proposed work and proper rules for the conduct of the competition itself combine to attract them, and the pressure of other business does not hinder. It all simply comes to this, that architects very properly prefer to have business seek them instead of their having to seek it, and the uncertainties and disappointments that necessarily accompany competitions serve to intensify this preference. When a piece of work dawns upon his horizon an architect naturally hopes that it will come his way, and feels disappointed and somewhat aggrieved if he finds that his neighbors also are being consulted. Still he would rather take his chance with them than lose the opportunity altogether. It has thus sometimes happened that men who had been most conspicuous in decrying competitions in general have been the first to complain when important public work has been given out without their having a chance to take a hand and show how they would treat it. As soon as a new candle is lighted they flutter about it and forget that the longest wings are apt to get most badly singed.

Indeed, so uncertain and capricious is public favor, even towards the favorites of the public, that even the best-established houses cannot afford to neglect any legitimate occasion for enlarging their business connection, however much they might prefer to have things come to them unsought. Still less can the less fortunate and less known afford to neglect the opportunity which competitions offer to make a name or to advance their fortunes. It happens accordingly that in spite of all disclaimers there is always a sufficient number of desirable and trustworthy candidates for every competition that promises to be honestly and intelligently conducted. Indeed, plenty of men are always to be found fairly equipped with ability and character who do not wait for any assurances, either of intelligence or of honesty. Under these circumstances it would seem to be more reasonable and more reasonable for architects to recognize the advantages of the system and attempt to mitigate its evils, rather than to decry it altogether, in the vain hope altogether to do away with it.

Of the advantages to the profession which competitions offer, the opportunities which they thus afford for extending the range of an architect's personal experience, and for giving capable but little-known men the chance to show what they can do, is the most conspicuous. It is illustrated in the whole history and biography of the profession. This is also, of course, of equal advantage to the community. It widens the range of practicable and justifiable choice. Committees will gladly, as the result of a competition, employ practitioners whom it would have been unreasonable or improper for them to take under their patronage in advance. The validity of this argument is attested by many notable examples. But it is naturally made light of by men who have already attained eminence, and a disposition to destroy the ladder by which one has himself climbed is too common and too natural a weakness to be made a matter of serious animadversion. People very properly wish to enjoy the fruits of their success without being disturbed at the repast.

Yet young men do not thus leap into fortune so often as is sometimes supposed, or as might perhaps be expected. At any rate, it seldom happens that the prize goes to incompetent hands. The fears sometimes expressed, that competitions will ruin the rising generation, whose heads will be turned by easily won successes, have little warrant in experience.

Competitions also tend to serve the profession by alleviating another disadvantage of the system of direct appointment; that is to say, of the system of personal patronage. Under this system, the architect must always be looking out for a patron, some one who will do him the favor to employ him, for this is the kind of work that naturally goes by favor. He is always haunted with the question how to secure his next job, a question which is a more serious one for the architect than for most men. For it is to be observed that an architect's emoluments always come in large parcels. His money comes, when it comes at all, not by fives and tens, as is largely the case with even the most prosperous lawyers and doctors, but by hundreds and thousands. To get or lose a single piece of work may make the difference between ease and penury for a year to come. In this strait the temptation to curry favor, to intrigue for patronage, to underbid the market, to regard every case as an exceptional one—and no two cases are exactly alike—so that slightly unprofessional conduct seems quite justifiable, is constantly before him. If, then, he has no special gifts for securing business, as is often the case with men admirably equipped for doing it, and if he has neither friends nor family to procure it for him, that is to say, if he has neither *push* nor *pull*, he may well find satisfaction in the system of competitions. It is a system which invites him into the open market, where he and his wares shall be judged upon their merits, and where, whether he disposes of them for a price or finds them left on his hands, he has nobody to thank or to complain of but himself.

It is often said that competitions are merely a device to bring matters to a practical issue, and that selecting the best design is only a roundabout way of selecting the best architect, or at any rate the one who is the best for the purpose in hand. After that, it is said, matters should go on just as if he had been appointed in the first place without making any drawings at all, for that the real object at this stage of proceedings is not to secure a practicable design, which a competition is ill-calculated to furnish, but to secure a capable and trustworthy adviser, who should then by good rights begin *de novo*, under these more favorable circumstances for doing his best, and should be implicitly trusted.

But this is not really so. The successful design is not only a guarantee of its author's strength, but as has been said, it is a safeguard against his weaknesses. This might be illustrated by conspicuous examples where a change of site or some other alteration in the conditions has caused a premiated design to be set aside and an entirely new one to be made, with lamentable results. The first success is no guarantee of a second. Besides, a successful competitor is tempted to rest on his laurels. He is hardly likely to take up the problem a second time and give it a radically different treatment, when the first solution has once proved acceptable. The most that can be expected of him, except under compulsion, is that he will modify the details.

In attempting thus to hold the balance between the *pros* and *cons*, one is somewhat surprised to find the most weighty arguments all piling themselves up in the same scale. Competitions seem to be desirable for almost everybody. Besides the expense and delay, the main objections to them on the part of the owners seem to be that they restrict freedom of intercourse between the client and his architect in the early stages of the work, and that they tend to bring into his service, on merely technical grounds, a stranger whom he would not otherwise think of employing. These evils are real, but they can be greatly lightened. Experience has shown that they are largely offset by the better understanding of the work in hand, which a well-considered competition secures, and the greater range of choice in the selection both of an architect and of a design. To the community at large, competitions are an almost unmixed good, for they tend to bring into use all the talents that are at hand, and thus to improve the world in which the community has to live, while they bring to bear the only efficient restraint that seems to be practicable upon the vagaries and infelicities of architectural enterprise. It would be well if some equally efficient agency were at hand to prevent works of civil engineering from defacing and disfiguring both town and country.

To architects themselves they are seen to offer a legitimate opportunity for extending their business connections, increasing their professional experience, continuing their disciplinary studies, and bringing their names into favorable notice, while they tend to release them from dependence upon personal patronage and from the temptation to intrigue for the chance of employment. The chief objection to them, from the architect's point of view, is that they expose men who are already successful to an unwelcome rivalry, thus, in a measure, depriving them of their legitimate reward, and that they necessarily involve a large amount of disappointment and vexation to the defeated competitors; that they disturb the ordinary course of business, and that the gambling element which often infects them, lowers the tone of the profession and involves a serious loss of time and money. But so far as these damages are not purely sentimental, they can be greatly diminished, if not entirely removed, by judicious forms of procedure, as has of late years been abundantly demonstrated.

It is customary, indeed, in the profession, to speak of competitions as a necessary evil, the only other opinion that finds frequent expression being that they are an unnecessary one. Yet a procedure that has survived for two or three thousand years must have some real adaptation to its environment, some great fitness to account for its survival. Without going so far as to say that "whatever is right," one may still believe that no institution could have maintained itself so long unless it had a sufficient *raison d'être*, some valid justification, and met a real want. This consideration may be held to be a sufficient answer to the question which is sometimes somewhat querulously asked, why architects have to compete for employment any more than other professional men, lawyers, doctors, clergymen, or even civil engineers. It is really sufficient to reply that the very prevalence of the distinction shows that there must be some solid reason for it, since there is no effect without a sufficient cause.

What the reason is is another question. But it is a question that admits of an easy answer. Lawyers and doctors are not asked to show beforehand how they propose to treat the cases submitted to them, simply because it is, unfortunately for their clients and patients, impracticable to do so. If it were practicable for a lawyer to prepare his brief and try it on the judge and jury beforehand, so that his client would know whether the point he makes is a good one, and the precedents he quotes are really pertinent, there would be in every important trial a competition of lawyers to see who should be selected to conduct it. If in sickness or accident, it were practicable to try by experiment which medicine or which surgical treatment would work the best, the result would determine which doctor should undertake the case, and all the High Priests of Æsculapius would be found contending for the honor and the fee.

Among the clergy, indeed, this sort of trial is more possible. Men preach as candidates to see whether their style of sermon and their pattern of theology suit the tastes or prejudices of a congregation, and the congregation institute a sort of limited competition, inviting certain men of whom they have heard a good report to take turns in the pulpit. The ministers hate it, but there seems to be no other way, at least in the independent and democratic churches. Any sensible man will use every possible means of ascertaining and testing the quality of anything before he puts his money into it, and of securing to himself a choice among alternatives, if it is practicable to do so. The reason why doctors and lawyers are not chosen by competition is simply that it is not practicable, and the reason why architects are, is that it is, perfectly so.

In civil and mechanical engineering, also, competitions are not infrequently resorted to. Whenever it is a question of engineering design, and not, as in the general practice of that profession, merely a question of applying recognized methods to particular cases, the man is chosen who presents the best scheme.

Stephenson was thus preferred to Ericsson to build the first locomotive, a horizontal cylinder being judged better than a vertical one. In the appointment of civil engineers, it is becoming every day more usual to employ competition, especially in the case of bridges. The engineer of the Washington Bridge over the Harlem River, in New York, was chosen in this way, and the engineer of the new East River Bridge and the President of the Society of Civil Engineers did not consider it beneath their dignity to compete for the Connecticut Avenue Bridge in Washington. At this moment four eminent men of science are preparing designs in competition for the so-called Soldiers' Memorial Bridge over the Potomac. It is said that bridges belong to architecture quite as much as to engineering, so that this proves nothing, one may answer that at least it shows this, that even engineers find competition necessary as soon as architecture begins to enter into their work.

It is also sometimes said that to ask architects to compete for employment is to put them on the same footing as the contractors. But this is palpably not the case. One contractor is preferred to another, after a comparison of their figures, purely as a matter of business. It is a mercantile transaction—a mere question of buying and selling. It is a Dutch auction, at which the lowest price carries the day. Now it is true that, in the practice of his many-sided calling, an architect needs many of the qualifications of a man of business, as other professional men, and indeed most men, do. But it is not as a man of business that he is asked to compete. On the contrary, it is because he is also an artist. It is because their work is analogous to that of sculptors, not to that of stone-masons, that architects, like sculptors, have, in all ages and countries, been asked to show who could do the best work, before they were allowed to begin, and have not been permitted to waste their own time and other people's money, when, by a comparison of their ideas, the waste could so easily be prevented.

But even though one may believe that competitions have their legitimate place, it does not follow that he will wish to take part in them himself, any more than it follows, because one man does not care to take part in them, that other people should not. A physician may believe in vaccination and a lawyer may have proper respect for the criminal law, without caring in their own persons either to vaccinate children or to be counsel for thieves. It seems desirable that in laying down rules for the conduct of competitions, there should be more discrimination than is always shown between what men are ready to relinquish for themselves and what they shall forbid to others.

Granting then, what cannot well be denied, that competitions are sometimes desirable and are often unavoidable, it remains to consider by what methods they had best be conducted. There is some difference of opinion among architects on this point.

There is indeed a general agreement that Committees should employ professional assistance, since they need it at every step. They need this assistance first in examining the conditions of their problem and ascertaining its capabilities and its limitations, so that they may not ask for what is impossible and may get everything that the circumstances permit. These examinations will also clear their minds, enabling them to see just what they want, and to distinguish between what is necessary and what is only desirable. Secondly, they need assistance in the statement of these requirements, so that there shall be no ambiguity of language and no omissions. Complications also are likely to occur which do not readily suggest themselves to persons inexperienced in these matters and which may be the source of much embarrassment, if not provided for in advance. The programme should provide for every contingency. Finally, professional aid is needed in examining and choosing among the designs, not only because Committees often do not understand drawings very well, and need somebody to explain them, but because, though they may know whether their own taste and convenience are suited, they cannot in general be competent judges of artistic and technical merit, and the interests of the work and of the public require that they should be well advised in these particulars. In these matters of taste also there is likely to be a difference of opinion among members of the Committee, and it is desirable that the men of sound opinions should be backed up. Moreover, competitors are naturally unwilling to submit such questions to the decision of an incompetent tribunal, and should not be asked to do so.

So far, there is little difference of opinion. But there is a considerable variety, both of opinion and of practice in details. How many the jury should consist of, whether it should be named by the Committee or by the competitors, and whether its decision shall be mandatory or only advisory, are questions which may well have different answers in different cases. Important public work may properly be managed somewhat differently from more private undertakings. In regard to the last point especially, the binding authority of an expert judgment, though the decision of a professional jury may in the case of a public building very well be final and conclusive, it is obviously proper that in more private enterprises the personal tastes and preferences of the proprietors should have freer play, and that the report of their professional advisers, while definitively rejecting the unworthy designs, should allow the owners to choose for themselves among the best. People naturally think that they should have some say as to what they will buy with their own money. Experience has shown that this rejection of the least good is a sufficient and effective bar to those evils of patronage, or at least of an unworthy patronage, to which such competitions are particularly exposed, while it protects the owners from a professional dictation which is especially unwelcome in private undertakings. Moreover, although there is a well-authenticated opinion that, in any problem, there is always one good solution, and that all the rest are of no account in comparison with it, in point of fact, it is not so. The difference in excellence among the three or four best designs is often so slight that the personal, and indeed arbitrary, preferences of the owners may properly turn the scales, even when practical considerations of convenience, of which the owners are often better judges than their advisers, do not afford still more legitimate grounds for a final choice. If, on the other hand, any design really has preëminence, it is easy for the jury to say so, thus exercising a moral compulsion which is equally effective and much more acceptable. It may be added that this procedure, in binding the owners to make their choice from a selected list, binds them not only to ask advice, but to take it, as the competitors have the right to require. If Committees proclaim that they are going to ask professional advice, they are bound to give it due consideration. That is part of their contract with the competitors. But just how much should they be governed by it? It is generally a sufficient answer to this difficult question, if they agree to make their choice among those designs that have received a professional approval.

Besides, it is to be remembered that even a jury of architects is not infallible. A limited power of revision may well be reserved to their employers. It is an open question also whether Committees, as responsible agents, have a right to delegate the final choice to an irresponsible adviser. It is said that, as in the civil service, the most they can do is to obtain from him a certified list from which to choose. Indeed the Courts have held that in some cases even this is *ultra vires*.

A provision of this sort is of value not only to the competitors, as preventing favoritism among the Committee. It is of equal value to the Committee in relieving them of the suspicion of favoritism. Nothing can do this effectually except a provision which renders favoritism impossible.

The employment of professional advice at the beginning will afford reasonable security that in the instructions issued to the competitors the requirements will be clearly stated and that they shall be capable of performance. So far as possible, also, a distinction should be made, as has been said, between the things that are desired and recommended, but which a competitor may disregard if he thinks best and is willing to take the risk, and which the jury may waive, and those provisions which are absolutely essential, the neglect of which will cause the rejection of a design. The list of these more important items should be made as brief as possible, for it is in the interests of the work that the competitors should have as much freedom as circumstances shall permit. But it should include everything upon which the owners have really made up their minds or upon which they have invincible prejudices, lest the competitors should be led astray.

In any case the competitors should have the full benefit of all the preliminary study which the owners or their advisers have given to the problem, even to the extent of furnishing for their use any tentative plans that this study may have evolved.

To the list of requirements, the paper of instructions adds a list of the drawings to be furnished, giving their number and the scale and the style of draughtsmanship to be employed. Here again there is naturally and properly a variety of opinion and practice.

In an open competition, to which all who choose to come are invited, there is every reason, as has been said, for having the drawings as few and simple as possible, for it is the interest of all parties that such a competition should cost as little as possible in time and money. Such a competition appeals primarily to the large class of young or little-known practitioners, and it relies for success upon bringing a large number of them into its service. But if they all, or a chief part of them, are to be paid for their work, this involves great expense, unless the sum given to each of them is small, and the work done must in that case be small in proportion. If they are not to be paid, no large number of competitors will present themselves unless the amount of work required is very small indeed, so that in either case, whether paid for or not, the work asked for in a general competition should be a minimum. How little will suffice, some recent experiments have shown, pencil-drawings on tracing-paper

having been found to answer every purpose of comparison and selection. Indeed, the smaller the drawings the easier it is for the jury and for the committee to handle them and to understand them, and to bring together those that need to be brought into comparison.

But it is difficult to keep expenses down unless a very small scale is employed, each competitor being tempted to put in all the work the scale admits of lest the rest should do so. The recent example of the United States Government in asking for drawings at a sixteenth scale even for important buildings cannot be too highly commended for imitation. Limiting the scale of the drawings is all the more important in that it is not always practicable to limit their number. But no more should be asked for than are needed fairly to present the distinctive requirements of the programme. The choice always turns, and ought to turn in the first instance, on these points. For purposes of comparison, full sets of drawings are unnecessary, for the treatment of minor matters has, and ought to have, no influence on the decision. But drawings that are not to influence the decision are, at this stage of proceedings, superfluous, and should not be asked for.

But though such sketches suffice for the major part of a jury's task, which is a work of rejection, so that it is not difficult for them to narrow the choice to a few of the best, it may sometimes happen that they may not present these schemes with sufficient fulness to warrant a final choice among them. With this in view it is well to reserve the privilege of returning these drawings to their authors for further elaboration. If, then, new conditions have meanwhile arisen, or the proprietors have, as the result of the competition itself, obtained a better understanding of what they really want, so that they desire to modify the conditions, a second competition may sometimes be advantageously instituted among the authors of the most successful of the designs.

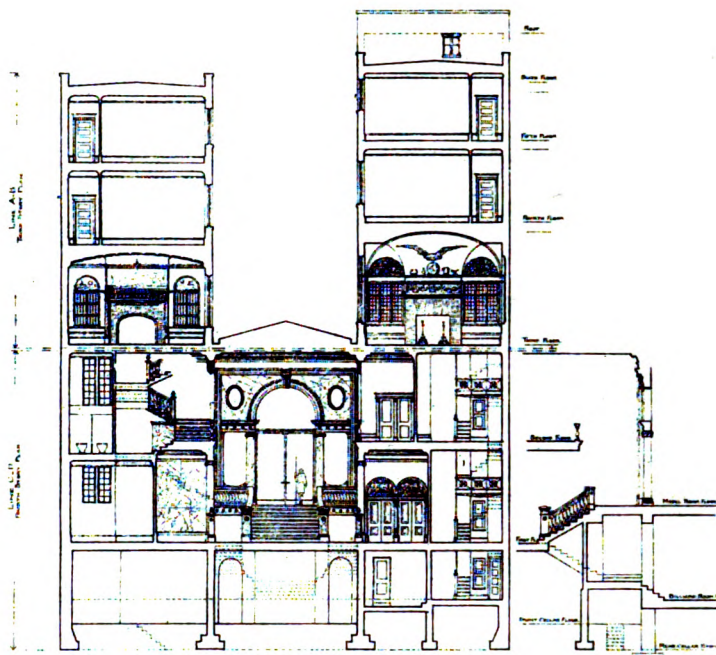
Such a procedure completely meets the objection often urged against a competition of sketches, that it compels the Committee to make a final choice without knowing what they are really going to get. This second competition may be conducted on a more ample scale without great expense. But though there are notable examples to the contrary, a double competition of this sort seems undesirable, unless the first trial is one of mere sketches. If the first drawings are elaborate, a second set made under substantially the same conditions will be likely to be virtually a mere repetition of the first, and not worth the trouble and delay they involve. But such more highly-finished drawings are needed only for the designs among which choice really lies, and there is a great economy in not requiring them from all the competitors at the outset.

The same considerations apply to the case of Mixed Competitions, as they are called, in which, in order to make sure of a sufficiency of trustworthy competitors, a certain number are specially invited and receive compensation, a general invitation to serve without pay being issued to the rest of the profession. Here also the work demanded should be a minimum, if any real advantage is to be had from this extension.

But in the case of a Closed Competition, among specially invited competitors, there would seem to be no reason why any amount of work should not be asked for which the nature of the problem may suggest and which the owners are willing to pay for. Yet even here it is well to avoid undue interruption of business and unnecessary disturbance of mind by keeping the work within moderate limits. In any case, however, it seems better to have all the competitors paid alike, rather than to have prizes of different values, and one of the advantages of diminishing the requirements to the utmost is that it may then be practicable to offer a considerable number of prizes which though small are large enough to meet the expense involved, so that even in an Open Competition all the best work, at least, may be properly paid for. Architects go into these contests not to make money out of prizes, but in the hope of getting the work to do, and ask neither for a reward of merit nor for a personal compliment, but only for a reimbursement of their expenses. These are presumably the same for all. Moreover, equal compensation puts all the defeated competitors upon the same footing, and nobody has to add to his disappointment the mortification of getting the lowest prize, sometimes a most unenviable distinction. Indeed, even a second prize seems sometimes only to signalize defeat.

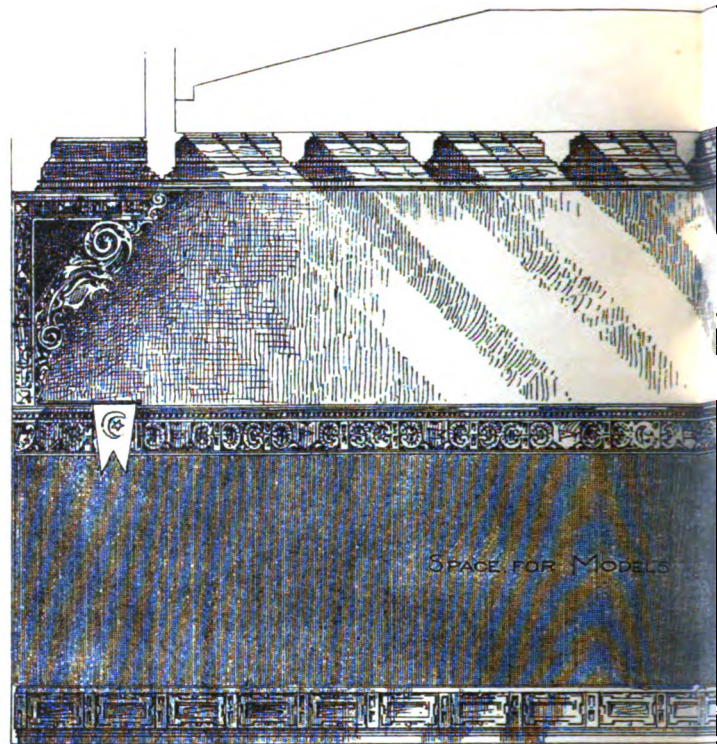
Whether many or few, the drawings should be precisely enumerated and no extra or illustrative drawings should be admitted; otherwise the award is likely to go not to the man who has done the best, but to the one who has made the most imposing show, and the longest or most reckless purse will win. Alternatives showing variations in the treatment of details should, I think, not be permitted at this stage of proceedings, unless asked for to illustrate alternative conditions. But competitors should be allowed, if they please, to present different designs embodying different ideas. It is the main object of the competition to obtain a number of schemes to choose from. Here again, if only sketches are asked for, the competitor may well afford to make more than one set. As to the style of rendering, it is more important that it should be the same in all the designs, so that no one of them may have any advantage by reason of draughtsmanship, than that it should be particularly good, or should do full justice to the author's idea. Exquisite draughtsmanship is a snare, deceiving both the architect and the jury. The best way to secure uniformity of style in the draughtsmanship is to furnish a print of some building illustrating the kind of drawing required.

Besides the necessary plans, elevations and sections, drawings in perspective, all made from the same point-of-view, are an invaluable

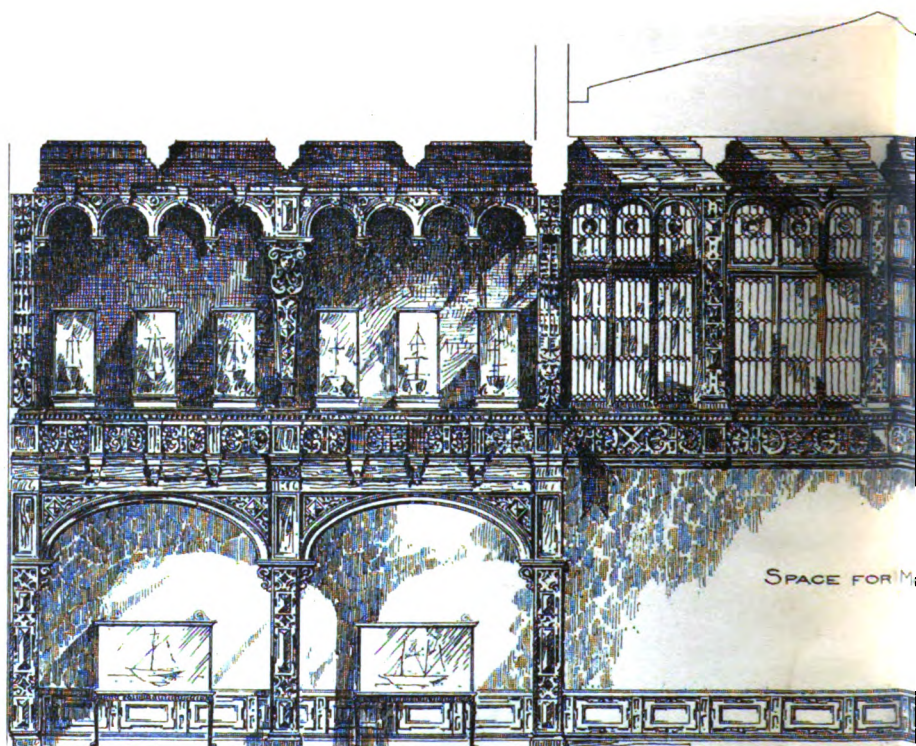


TRANSVERSE SECTION.

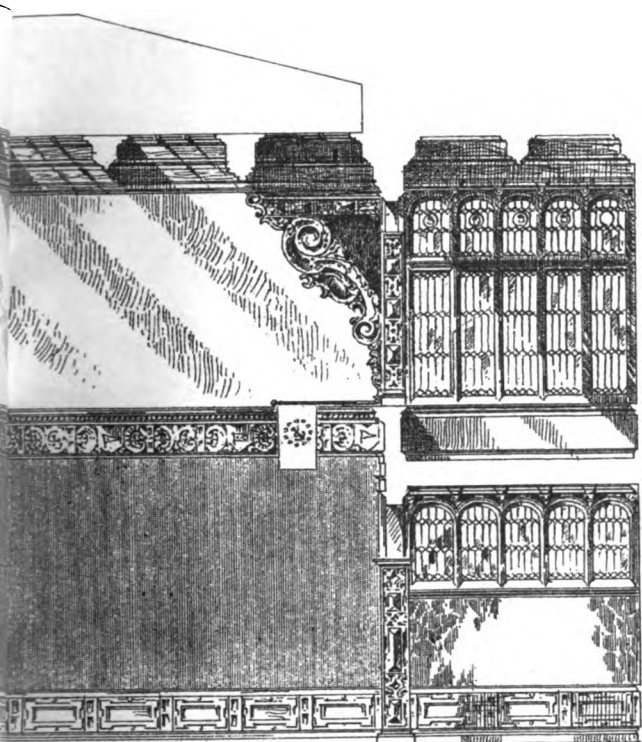
LONGITUDINAL SECTION THRU MAIN STAIRCASE.



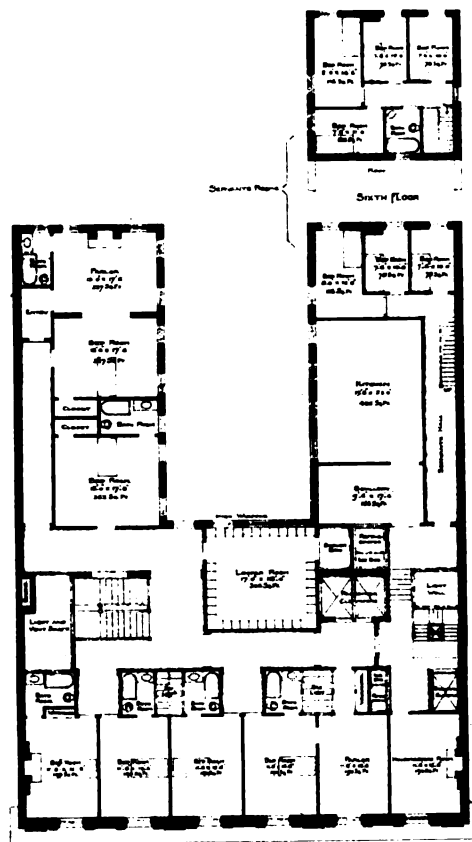
CROSS SECTION OF
LOOKING WEST



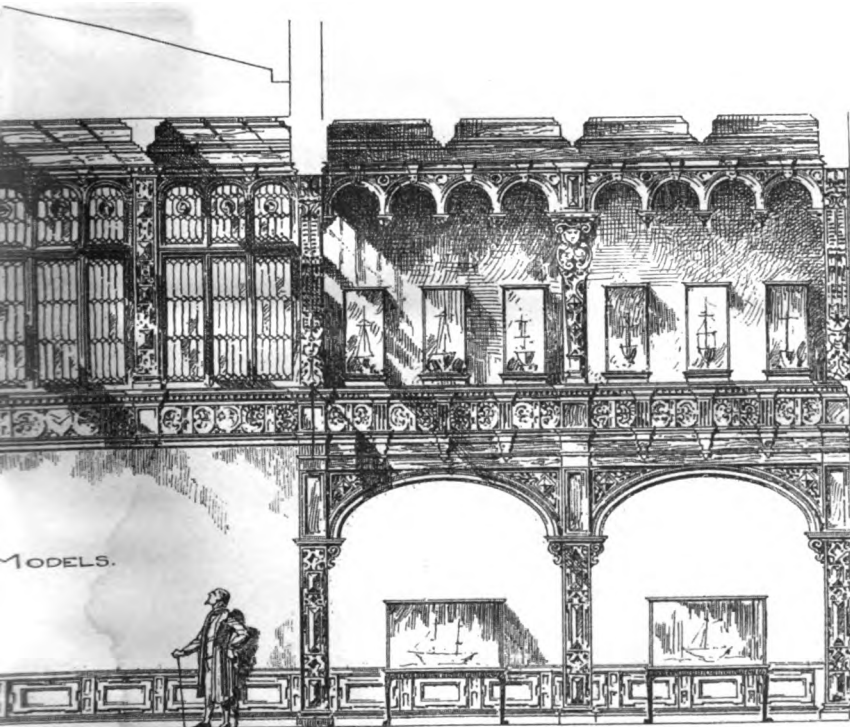
LONGITUDINAL SECTION
LOOKING NORTH



MODEL ROOM.
WEST.



FIFTH FLOOR.

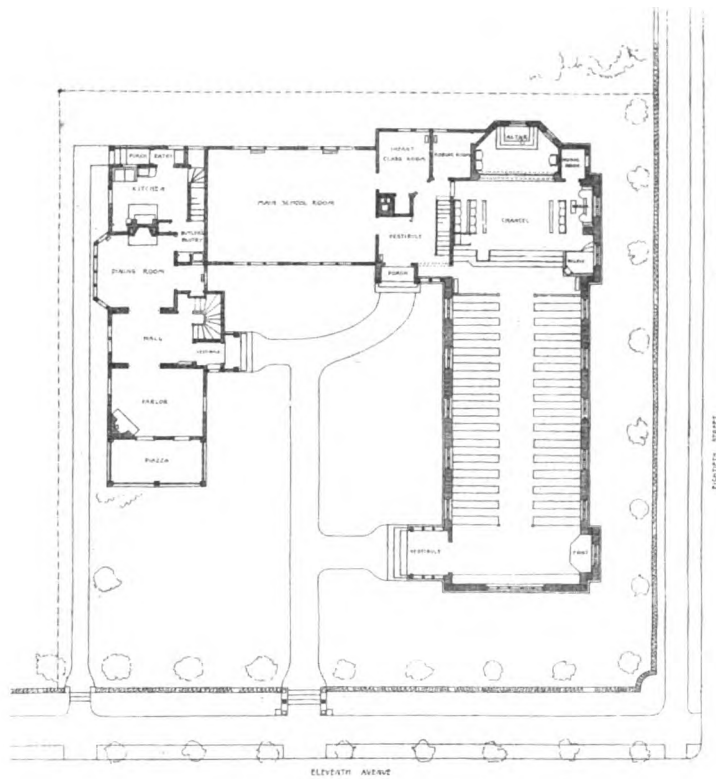


OF MODEL ROOM.
NORTH.

OF THE NEW YORK YACHT CLUB.
ARCHITECT.

MILITARY PRINTING CO., BOSTON





St. Philip's Church.
Dyker Heights.
Brooklyn, N.Y.
Albert E. Parfitt. Archt.

auxiliary. The objection so often made, that such drawings are deceptive, and are calculated to beguile committees with fictitious effects of color and shadow, is obviated by making them in black-and-white, or merely in outline. They will still answer the principal service which a perspective can perform, and which nothing else will, that of showing the sky-line and the relations of the principal masses as they will really appear. As to unreal and factitious effects, nothing can well be more obnoxious to this objection than a drawing made in geometrical elevation, since it presents the building in an impossible aspect as seen from an inaccessible point, and its parts in factitious relations. Nothing could be more open to the reproach of misrepresentation than the conventional colors and exaggerated light and shade which carefully rendered elevations habitually present.

The other objection, that perspectives seldom honestly correspond to the elevations, but are usually "faked" so as to look right, refutes itself. It implies that an honest perspective showing the design as it would really appear, would look wrong; that is to say, that there are mistakes in the design which had escaped notice until the perspective revealed them. One of the chief advantages of putting buildings into perspective lies in the suggestions which thus arise for the improvement of the design. But of course this advantage is obtained only when the perspective is made under the architect's own eye. The liberties taken by the professional aquarellist are likely to escape notice, and the improvements he makes are not detected.

The Paper of Instructions should, finally, be perfectly explicit in regard to business matters. In the first place, it should be made clear whether the promoters are acting in their own behalf or as agents, and in either case whether they have authority to proceed to build, and the language used should be such as to constitute a valid contract between them and the competitors. Assurance should also be given that the successful competitor shall be paid according to the schedule of charges approved by the American Institute of Architects. This is necessary not only to prevent any possible trading or underbidding on the part of other competitors, if such things can be, but to protect the successful competitor from haggling and beating down on the part of the owner. If any other scheme of payment is in contemplation, the fact should be explicitly stated in advance.

Assurance should also be given, wherever possible, that the successful competitor shall do the work. But this is not always practicable or reasonable. Even in Limited Competitions among invited competitors, it may happen that the Committee find themselves constrained to invite men in whom they have not perfect confidence, and whom they do not wish to employ. This is of course a most undesirable state of affairs. But it sometimes exists, and when it does it should be frankly met by reserving to the owners the right to associate with the successful competitor some person acceptable to himself, with whom he shall divide the labor and the profits. This might seem to be so offensive a proposition as to deter men from taking a hand. But it does not prove so. The more experienced men feel quite sure that it does not point to them, and the men whom it does mean either withdraw, which does no harm, or are glad to take their chance under almost any conditions.

In an Open Competition, of course, such a provision is essential in order to protect the owners. Otherwise there is nothing to prevent any irresponsible person from hiring an equally irresponsible designer and a sufficient number of capable draughtsmen and carrying off the prize. But even in this case if the design is really the best one, it is for the interest of the work that the owners should be able to use it, under such provisions as safety may require, the author having his proper share of the credit and of the profit.

So, also, if there is anything in any of the rejected designs that would contribute to the perfecting of the contemplated work, it is proper both that the owner should have the benefit of the suggestion and that its author should have proper recognition. Here again there is some difference of opinion and of usage. Committees are apt to think that designs for which they have paid something ought to belong to them to use as they will, and that this forms part of their bargain with the competitor. They do not understand that what they pay for is not the right to use it but the right to choose it. If they use it, or any part of it, they must pay in addition accordingly. But when the fee is large, it is sometimes provided that all the designs shall belong to the owner or proprietors to do as they please with, and of course nobody who accepts such conditions can complain if they are carried out. But most people will refuse to accept them unless the pay is very large indeed, and though a provision of this sort seems favorable to the owner, in fact it is not so. For the money spent in the large fees which alone make such a scheme practicable is for the most part thrown away. It seldom happens that different schemes can be incorporated into one. But minor details are sometimes adaptable, and it is customary to make provision for this contingency by a clause in the programme saying that "nothing in any of the rejected designs which is original as to this competition shall be used in the building without the consent of its author, and proper compensation being made to him." This seems perfectly fair, and it is of course an efficient safeguard against the fraudulent trick, said sometimes to be practised, by which a Committee adopts a design out of favoritism, and then fortifies it by adapting or adopting the best points of its rivals. But on the other hand, it puts it in the power of a disappointed and unscrupulous competitor to revenge himself for his disappointment by refusing the

permission asked. This would bring on difficult and delicate questions of originality in authorship which however answered would be most embarrassing. I am disposed to think that the programme should stipulate in behalf of the owner for the right to employ any such features on making proper compensation; that is to say, the right not only to use the whole of one design, taking its author for his architect, but to use any part of any other. The owner institutes the competition in order to solve the various problems which the case presents, and it seems reasonable that he should profit by the solutions given to any of them, on making proper payment. If, as is generally the case, it is stipulated that the rejected designs shall not be shown to the successful competitor, this provision is hardly liable to abuse.

There is one case, however, in which uniting two designs in one is sometimes perfectly practicable. One of the many ill-considered dogmas which cloud the minds of architects, maxims lightly given out and lightly accepted, but without real basis in fact or in reason, is the saying that in the nature of things a good plan and a good elevation must always go together, that a good arrangement of rooms suggests a good façade, and that an exterior composition is not a good one unless it suggests and corresponds to a good distribution within. Nothing could be further from the facts. It constantly happens, as everybody who has had to examine a series of competition drawings will testify, that these two kinds of merit may exist, and constantly do, in entire independence one of the other. It constantly happens that an admirable plan is accompanied by an intolerable elevation. It might have had a good one, but it doesn't. A noble exterior may be set up from a wretched plan. In this case the obvious thing to do, in the interest of all parties, is to roll the two into one, to couple the good plan with the good elevation, and then to arrange if possible that the two architects shall form a temporary partnership, *ad hoc*, and carry them both into execution. Personal antipathies and susceptibilities, of course, stand in the way of such a consummation, but from an architectural point of view, it is often perfectly feasible and reasonable.

When this case presents itself, that is to say, when such a combination will really effect the best solution of the problem, and yet the two architects in question cannot agree to work together, it ought to be practicable to have one of them act as architect of the building, and to have the other dispose of the right to use his ideas for a price. Which should do which would depend upon who was who. But in general, one may suppose that in spite of all that is said, and so justly said, of the paramount importance of the plan, the author of the elevation would be the architect. This would almost necessarily happen, for he would presumably be nearly as competent to execute the plan as its author, and if he could not do it himself, he could find assistants who would, while as to the elevation, the author of the plan would presumably be as incompetent to carry it out as he was unable to conceive it in the first place. In fact, of course, nobody except its author could carry it out successfully in detail.

Another open question is whether competition drawings should be signed or not. Here also there is some difference of opinion and practice. The question is, whether the merits of the designs and the merits of the designers shall be considered separately or together. I cannot help thinking that reason and experience are both in favor of considering these two things separately. They are totally different questions, and are best taken up one at a time. Whether men may safely be entrusted with the proposed work is a question which may often be considered in advance and the competition restricted to trustworthy persons. If this for any reason cannot be done, then this question may well be left to the last, when personal considerations of age and experience may properly come in to turn a scale evenly balanced between two nearly equal schemes. This, moreover, restricts these somewhat awkward questions as to personal responsibility to two or three of the competitors.

It is sometimes considered advantageous that, before the decision is reached, the competitors should meet the committee to answer questions and make explanations. This can be secured, as it often is, by a phrase in the programme saying that the committee, if they find occasion to do so, will "open the envelopes containing the names of the competitors before they make a final decision, so that personal and business considerations may have due weight." In Open Competitions, a provision of this sort is, as has been said, absolutely necessary for the protection of the owners. But it is obviously in the interests of truth and justice, and equally to the advantage of the committee and of the competitors, and for the convenience of the jury, that in the first instance the study of the designs should be made without prejudice, and the task of investigation and selection be guided by their merits alone. This is also the only way in which the jury can themselves hope to render an unbiased and impartial verdict, or to be thought to have done so. Indeed, when juries have to deal with signed drawings, it is very much the custom with them, in order to protect themselves from cavil, and for the sake of their own peace of mind, to have the names covered up before their examination of the drawings begins.

It is true that competitors sometimes unite in asking permission to sign their drawings. But it may be surmised that this suggestion comes from the better known men, who naturally think that they ought to reap a legitimate advantage from their professional standing and reputation, and that the rest of the competitors acquiesce, with such grace as they can command, in what they feel to be prejudicial, but do not see their way to oppose. Something of the same sort may

be said in regard to appearing personally before the committee. If they can do that, it is all that some men need want.

What the programme should say about the cost of a proposed building is another vexed question. My own impression is that it should say without reservation how much money the owners intend to spend, and should ask for approximate estimates on the basis of the designs submitted. These estimates had better be itemized,—so much for the building itself, so much for the foundations, so much for sculpture, decoration, heating, etc. If it is added that the owners "will not reject any design on account of its apparent cost, without first giving its author an opportunity of justifying or modifying his figures," it seems to me that all interests are guarded, and the question of cost answered as nearly as it is practicable to answer it at this stage of the proceedings. Moreover, it is to be said that if the cost of the more variable items is thus subtracted, the cost of the structure alone will presumably be about the same per cubic foot for the different designs. It ought to be. At any rate, this figure is entirely within the control of the owner. He can build for fifteen cents a cubic foot, or for fifty, according to the materials and style of construction and decoration that he prefers to adopt, and with the assistance of an experienced contractor, and of his professional advisers, he can satisfy himself as to the relative cost of the designs among which his choice is found to lie with as much precision as he cares for. The cost will indeed thus resolve itself into a question of the relative dimensions in cubic feet of the designs submitted, and the design which wastes least space will cost the least.

It is worth while to add that it is perfectly practicable in many cases to reduce the cost of a building, simply by applying a larger scale to the drawings. A shrinkage in lineal dimensions of one-eighth will reduce the cubic contents of a building nearly one-half, and the square feet, that is to say, the surface of the floors, roofs, walls and partitions, nearly a quarter. Rooms forty feet long will be reduced to thirty-five, and doors four feet wide to three and a half. Many designs, especially for the more monumental buildings, will suffer this reduction without palpable loss. This device has more than once been applied to competitive drawings with excellent results. Even a reduction in linear dimensions by one-sixteenth, which would hardly be noticed, setting, say, thirty feet in place of thirty-two, and three feet nine inches for four feet, will reduce the cubic contents by nearly twenty per cent and the square measures by nearly ten per cent.

These considerations do not, of course, touch upon the objections to competitions which are based upon the bad faith and unbusinesslike methods of building committees. But though it is not easy to overstate this evil in many cases, I think these cases are less common than is supposed and I am sure that it is an evil which can be greatly abated. I have generally found that when things were explained to them, committees were as punctilious as one could desire. In the twenty-five or thirty cases that have come under my own hand there have been only four in which the committees at all misbehaved themselves, and in each case some of the competitors were equally to blame, or even more so.

For the history of competitions shows that the unbusinesslike and discreditable performances with which this history is disfigured are by no means confined to building committees. The efforts on the part of competitors to obtain unfair advantages by means of superior and captivating draughtsmanship, by superfluous drawings, or by bringing personal influences to bear upon committee-men before the decision is made, and attempts to discredit the award afterwards by disputing the fairness or the competence of the committee, or of the jury whose verdict they have agreed to accept, in the hope of securing a more satisfactory finish by making a fresh start, are equally to be deplored. Still more so are the personal recriminations which occasionally come to one's ears, though happily they seldom come before the public, competitors roundly accusing each other, sometimes apparently not without reason, of unprofessional and dishonorable behavior.

But all these things belong to the domain of personal and professional morality, an important field, but a field which lies quite outside the ground covered by this paper. They relate to the standards of conduct in these matters which obtain in the community and in the profession, standards which are much lower than they might be. Business-men, when put upon Building Committees, sometimes seem to find it difficult, or to consider it unnecessary, to employ the business methods and the maxims of honorable dealing which in their private affairs they would never dream of disregarding. Architects are, as I have said, under unusual temptation to step over the narrow limits of scrupulous procedure. It is one of the main objects of this Institute to raise the tone of both. But it is not the object of this paper to offer any suggestions to this end. Its aim is, on the contrary, taking things as they are, to show that the evils resulting from such misconduct, misconduct which competitions have often seemed to invite, may be greatly discouraged by methods which shall afford little inducement and little occasion, on any one's part, for discreditable practices.

For a well-devised procedure will, in the hands of independent and competent persons, offer little opportunity for unfairness, either in committees or competitors, and keeping the number, size and style of execution down to a minimum will not only prevent waste of

labor and money, but by limiting the amount of time and thought that can be put into the work, prevent the exalted hopes and cruel disappointments that are the chief bane of the system and which chiefly prompt men to intrigue.

What is here of prime importance is that measures should be taken to keep the expenses, whether large or small, strictly within the sums paid to the competitors, thus shielding them from the temptation to spend more than they are to get, in the hope of capturing the prize. "But," it may be said, "if architects are foolish enough to throw away their time and money on a mere possibility, why is it any of other people's business to prevent them?" The answer is easy. Because it is gambling. The State makes laws to shield its citizens from this temptation and danger, and the constituted authorities of any profession may well take measures of like nature to secure a similar end. Competitions do not indeed, like cards and dice, enrich one man to another's loss, nor do they, like speculating in stocks, tempt men to ruin themselves by incurring obligations they cannot fulfil. But they tempt architects to expend upon them more than they can afford to lose, both of time and money, and they are disturbing and demoralizing just in proportion to the amount of anxiety they awaken.

These disadvantages cannot be entirely got rid of, since it is in the very nature of competitions to excite the imagination and to introduce into a business which is at best somewhat precarious an added measure of uncertainty. But to place one's dependence on uncertainties is as unbusinesslike as it is dangerous, for it is good business to count only upon what one is reasonably sure of, allowing such margins of safety that ill-luck can do no harm. An architect who allows competitions to play an engrossing part in his affairs is relying not on certainties, nor even on probabilities, but on possibilities, and on only one of them. The only real probability is failure, and the more time and thought and money he puts into them the greater the loss and chagrin he has to expect. If he is to avoid the ruinous risks and the unwholesome excitements and depressions of the gambler he must put into such work only a moderate amount of labor, and must learn to regard the result with an even mind, or, better, disregard it altogether. If then he has time on his hands, and there is either no pecuniary loss, or it is so small that he can bear it without a pang, he may well regard competitions as coming within the range of legitimate business enterprise. No harm can come of them. Even the hells of Homburg and Monte Carlo would lose their name if their votaries satisfied themselves with penny points. But in competitions this temperance is almost impossible if the requirements are at all exacting; that is to say, if anything more than sketches is asked for.

In whatever aspects, then, we regard competitions we come to the same conclusion. We find that their advantages are enhanced and their evils diminished if they are conducted modestly, the issues presented made as simple as possible, the questions to be answered limited in range, and the work required to answer the questions reduced to a minimum. For the only issue a competition is well calculated to determine is that of the *parti*, the kind of thing it is best to do, the sort of building best suited to the case in hand. Questions of cost, material and construction, and personal questions as to the skill, experience and character of the competitors, cannot be answered by this procedure. They must be separately considered, as has been said, either before the competition is set on foot, or after it is concluded. But the main elements of the design, in plan and elevation, can be perfectly well settled in this way, and often more satisfactorily than in any other way. These questions, however, can be answered by sketches, any sketches, however small and simple, that will suffice to indicate the main elements of the scheme. How slight these may be has already been shown. Indeed, it is notorious. One constantly hears, after a decision has been reached by means of large and elaborate drawings, the result of endless labor and of expenditures which are never revealed, that the first sketch, made months before, exhibited all the qualities that finally won the triumph, that the original germ, so to speak, exhibited all the "promise and potency" of the final flower and fruit.

In thus passing in review the advantages and disadvantages of the system of competitions to the public, to clients and to the profession, it seems plain that the advantages are sufficiently real and important to account for and justify its continued existence. Since, then, we cannot reasonably expect to do away with competitions, and on the whole should not desire to, it is gratifying to find that with a little care and pains it is practicable materially to enhance their advantages and almost entirely to get rid of their most objectionable features. Experience has repeatedly shown that if in the first place the requirements of the problem in hand are carefully considered in advance, and clearly presented, and the final decision guided and in great part controlled by a competent and independent tribunal, and if in the second place the time and money to be spent upon them is no more than what is needed for an intelligent choice among the schemes presented, and this service is properly paid for, a procedure may be instituted to which no serious objection can be made, which can be undertaken without too much disturbing the ordinary course of business, and without too much disturbance of mind either before the award is made or after, and which ensures some notable advantages both to the public and to the profession which the system of personal patronage fails to secure.

FOUNDATIONS OF BUILDINGS.¹

IN recent years the field of operations of the architect has been considerably enlarged by the introduction of steel and iron work in the construction of buildings, and what was formerly considered to be exclusively the business of the civil engineer is becoming more the work of the architect. A knowledge, therefore, of the nature and properties of steel and iron and the methods of calculating the strengths of the various members of such structures is becoming more essential every day to the architect. It is not proposed in this paper to deal with the arranging and designing of such structures—this of itself would supply material for more than one paper—but rather to make a few remarks on the superstructure or foundations of such buildings, and, indeed, of buildings in general.

In ordinary buildings constructed of stone or brick walls, the pressure on the foundations is pretty evenly distributed over a comparatively large area of ground surface; so that pressure per square foot on the foundation is usually small, and does not call for any special consideration, except when the ground is soft or treacherous. In the case of lofty buildings of enormous weight supported on pillars, the case, however, is quite different. In such buildings as much as 1,000 tons may come on the foundation of a single pillar; the immense pressure being exerted on a comparatively small area of ground surface, it will be apparent that special means will have to be adopted for insuring the stability of such foundations.

My attention was forcibly drawn to the importance of this subject, and to the scant thought it sometimes receives by the architect, about four years ago, when I was asked to report on the causes of the collapse of a large mill then in course of construction in Germany. This was a typical Lancashire cotton-mill of several stories, the floors being for the most part supported on cast-iron pillars. These pillars rested, on brick piers, underneath which were beds of concrete, the concrete itself resting on sand foundation. Partly owing to the presence of water in the sand, partly owing to inferior bricks and mortar and the slovenly manner in which the work was executed, and, perhaps, also to the defective cast-iron base-plates on which the pillars rested, one day, when the construction of the mill was nearing completion, the foundation of one or more of the pillars subsided, causing the base-plates to fracture, and the shafts of the pillars to pierce through the brickwork and concrete beneath. This occasioned the complete wreck of the structure, and entailed the loss of the lives of several of the workmen. Here we have an example of a building carefully designed and erected, so far as its superstructure was concerned, but, owing to carelessness in the designing and execution of the foundations, meeting with an untimely fate.

In America the construction of lofty steel and iron buildings is carried to much greater lengths than in this country. The erection of what are termed "skyscrapers" seems to have originated in Chicago, and from there have spread to several other cities in the States, and it is not at all improbable that in the near future we shall see their introduction into England.

There may be many objections to these colossal structures from an æsthetic point-of-view, and I dare say many people consider them monstrous eyesores. There may be also some objections to them as excluding light and air; yet, when we admit all this, we cannot but admire the ingenuity displayed in their construction, and from a commercial point-of-view we must admit their claims, especially in cities where land is very valuable. Such being the case, we should face the situation boldly, and, instead of decrying them as monstrosities, should rather study them and make ourselves conversant with all the intricacies of their design.

In America, the work of designing these structures is usually divided between the engineer and architect. The details of their construction are so varied that neither the engineer nor the architect by himself can satisfactorily cope with them. The work of the engineer consists in designing the steel framework, including the pillars and girders, that of the architect in arranging the plan of the rooms and offices and the skeleton walls and partitions, and also the general decorations; while the foundations, which are of the utmost importance, might be planned conjointly by both. In providing for these, the loads coming on the foundations must first be carefully calculated. These consist of, first, the dead weight of the building itself, including that of the floors and roof; and, secondly, the loads on the floors, which may consist of goods, machinery, and people, and also the wind-pressure exerted on the building. These latter loads may change from time to time, and are sometimes termed live or accidental loads, and they vary considerably in different buildings.

The maximum live loads on the floors of dwellings may be taken as $1\frac{1}{2}$ cwt. per square foot; on public buildings at $1\frac{1}{2}$ cwt. per square foot, and on warehouses at from $1\frac{1}{2}$ to 3 cwt. per square foot. In the case of dwelling-houses and public buildings it scarcely seems probable that these loads can be reached, but it is always advisable to have a margin. It is quite possible that such floors may contain a densely packed crowd of people which may weigh as much as 1 cwt. per square foot of floor-surface. In the case of lofty structures consisting mainly of offices with light fixed furniture, it is not necessary to allow for such heavy loads as those specified. The weight of the roof, including wind-pressure and snow, depends on the span, and varies between 25 and 65 lb. per square foot of roof-surface.

A lofty steel structure has just been completed in New York, and it may be of interest to refer to a few particulars respecting it.

This is the Park Row Building, mainly consisting of offices. It is the highest building in the world, its height from the level of the curb in Park Row to the top of the cupola being 386 feet. It has thirty-two stories, and contains 1,000 offices, having accommodation for 4,000 persons. The total weight of the building is estimated at 65,000 tons, and the pressure on some of the pillar-foundations is as much as 1,100 tons.

The structure is carried on round timber piles of spruce from 10 to 14 inches in diameter, driven into a sand foundation to a depth of about twenty feet. The piles are placed from 16 to 18 inches apart, centre to centre, and are driven in rows, the distance between each row being about 24 inches—centres. The load on each pile does not exceed 16 tons. The heads of the piles were cut off level and concrete was filled in between them to a depth of 12 to 16 inches, the surface of the concrete being level with the tops of the piles. Upon the concrete are laid granite blocks which receive brick piers, which in their turn receive the grillage-beams and distributing girders. Some of the interior pillars rest directly on the grillage-beams, which are steel rolled joists. In other cases, distributing girders rest on the grillage-beams of two or more of the foundations, and support two or three pillars. These distributing girders are massive steel-riveted girders of the box form, and vary in length from 20 to 47 feet, and in depth from 6 to 8 feet, and some of them weigh as much as 47 tons.

This example of a building is, of course, an extreme case, and the architect may never be called upon to consider such enormous loads and such intricate foundations; yet the general principles coming into operation here are, in a modified way, applicable to similar buildings of less pretensions.

Having said so much in a general way, we will now consider more in detail as to what constitutes a good foundation, and what working loads different foundations are capable of sustaining. I would, however, remark that within the scope of a brief paper, hastily written, it is not claimed that anything in the nature of a complete survey of the question can be attempted.

In preparing a foundation, the first thing to be done is to examine the nature of the ground on which the building is to be erected. It is not often that the surface of the ground is suitable for building upon. If it is of rock, of course we have all that is necessary so far as stability is concerned. It is the exception, and not the rule, however, that a rocky foundation is to be met with. It then becomes necessary to excavate until a reliable foundation is reached. As to what constitutes a reliable substratum is a matter very largely the result of practical experience.

Ordinary foundations may be ranged under three classes, viz :

1. Foundations in rock, or in some material whose stability is not affected by water.
2. Foundations in firm earth,—under which are included such materials as sand, gravel, and hard clay.
3. Foundations in soft earth.

It must be borne in mind that the base of every foundation should be as nearly as possible perpendicular to the direction of the pressure which it has to sustain; and, moreover, it must be of sufficient area to bear that pressure with safety.

To prepare a rock foundation for being built upon, it will be necessary:—(1) To cut away all loose and decayed parts of the rock; (2) to cut and dress the rock to a plane surface, or to a set of plane surfaces like those of steps, perpendicular to the direction of the pressure; (3) to fill, where necessary, hollows in the rock with concrete or rubble masonry; or it may be advisable, in order to distribute the pressure, to cover the surface of the rock with a layer of concrete varying in thickness from a few inches to several feet.

The crushing-strength of rock varies considerably. That of chalk, if we may consider chalk a rock, is as low as 30 tons per square foot. The crushing strengths of different kinds of sandstone vary between 140 and 450 tons per square foot, that of limestone about 500 tons per square foot, while that of granite or basalt is as high as 1,000 tons per square foot.

The intensity of the working pressure on a rock foundation should in no case exceed one-tenth of the pressure which would crush it. It is not often in practice, however, that the actual pressure on a rock, or indeed any foundation, approaches this limit. Speaking generally, the average pressure coming on a fairly good quality of rock is about ten tons per square foot in work which has been executed; and the architect might fix in his mind anything up to 20 tons as a safe rule to go upon. On weak sandstone which is so soft that it crumbles in the hand two tons is sufficient to allow.

Having said so much on rock foundations I will pass on to the consideration of foundation laid on *firm earth*, under which head may be included hard clay, clean dry gravel, and clean sharp sand. For buildings resting on such foundations it is desirable, in this country, that the foundations should be carried at least 3 feet below the surface of the ground for sand or gravel, and 4 feet for clay, in order that they may not be weakened by the disintegrating effects of frost or other climatic conditions. In other countries where greater extremes of climate are experienced a greater depth is necessary. The practice in Germany, for example, I understand, is that for foundations of this kind the depth should be from 4 to 5 feet, and in North America from 4 to 6 feet.

¹ A paper by S. Anglin, Master of Engineering, Royal University of Ireland, read before the Manchester Society of Architects, October 12, 1899, and printed in the *Journal of the Royal Institute of British Architects*.

It is very desirable that surface-water should be kept from such foundations by constructing suitable drains.

Different authorities vary very much in their estimates as to what working pressure it is desirable to place on this class of foundations. The German authorities recognise 2.5 tons per square foot as a suitable pressure. With good clay, however, sufficiently beneath the surface of the ground to be protected from atmospheric influences, much higher pressures can be safely applied. The main piers of the Tower Bridge in London rest on clay, on which they exert a pressure of 4 tons per square foot. At Openshaw, near Manchester, the massive steel pillars of Messrs. Sir W. G. Armstrong, Whitworth & Co.'s works, which are subject to vibratory loads from passing cranes, exert in some cases a pressure of as much as 5 tons per square foot on the clay, and no settlement has been observed. In other buildings, no doubt, greater pressures exist; but this is the limit so far as my experience goes. In the great majority of structures built on clay the pressure is much less. That of the Nelson Column, in Trafalgar Square, London, does not exceed 1.3 ton per square foot. This column rests on clay of great depth and compactness. In preparing this foundation an excavation of 60 feet square and 12 feet deep was made and filled with concrete to a depth of 6 feet; on this base a frustum of a pyramid 13 feet high was built in brickwork, on which the superstructure was erected. On a base 60 feet square, which may be taken as the real base of active support, the gross load amounts to 4,665 tons, equivalent to 1.3 ton per square foot, as already stated. I think I may say that three times this load could with safety be placed on this foundation.

Foundations in gravel and sand, under favorable circumstances, are capable of bearing heavy loads. The Campanile of Cremona, 395 feet high, standing on Pliocene gravel, bears with a pressure of 12 tons per square foot on its base.

It is not often that water is injurious to a gravel foundation, as it can percolate through freely; but with sand, the case is quite different, as water so alters this material as to make it quite useless for a foundation. The obvious tendency of sand saturated with water is to escape laterally under pressure. If this tendency can be counteracted by any means, it may be possible, though not desirable, to utilize a foundation of this description. Sheet-piling driven around the foundation often answers the purpose. A case in point is supplied by the tower of the Hamburg water-works. This tower rises about 290 feet above the surface of the ground; it is built of brickwork, and rests on a circular block of concrete 56 feet in diameter and 11 feet thick. This in its turn rests on quicksand enclosed by sheet-piling driven below the line of saturation of the River Elbe. The gross weight supported amounts to 5,310 tons, which gives a pressure of about 2 tons per square foot on the quicksand.

A foundation of unequal density or compressibility is one to be avoided. When of equal compressibility any subsidence which takes place is uniform all over the foundation, and the structure erected on it is not materially damaged; but if one part of the foundation is more compressible than another, the structure has a tendency to be tilted out of the perpendicular, and cross-stresses are produced which may destroy its stability. In north Italy, as is well known, a number of leaning towers erected so far back as the twelfth and the thirteenth centuries exist, and the reason assigned in the majority of cases for these being out of perpendicular is the unequal compressibility of the foundations on which they are erected. A noted example occurs in the Campanile or leaning tower of Pisa. This is a circular tower 178 feet high, weighing 11,800 tons, with a base 60 feet in diameter, which is equivalent to a pressure of more than 4 tons per square foot. The soil under the foundation is of unequal density, it being more compressible in the direction in which the tower leans. That the settlement took place during the progress of the work may be inferred from the presence of iron bars introduced to hold the building together.

When foundations are too soft for building upon, and when the depth is too great for excavating to a reliable material, special means must be adopted. One method is that to which I have referred in the tower of the Hamburg water-works. Another method is to consolidate the ground by timber piles, which was the method adopted for the Park Row Building at New York. These bearing piles act as pillars, each supporting its own weight of the building. They may either be driven through the soft stratum until they reach a firm stratum underneath and penetrate a short distance into it, or if that be impracticable owing the great depth of the soft stratum, they may be supported wholly by friction in the soft stratum. From practical examples, the safe working loads on these piles may be taken as follows:—

For piles driven until they reach the firm ground, 1,000 lb. per square inch of the area of the pile may be allowed.

For piles standing in soft ground and supported wholly by friction 200 lbs. per square inch of pile section is sufficient.

The best material is elm. The point of the pile should be fitted with an iron shoe, especially if stones or other impediments are to be met with, and the heads should have an iron band to prevent its being split by the blows of the ram. They may be driven by hand or steam power. For the piers of bridges and similar structures iron screw piles or cylinders may be used.

In ordinary steel or iron structures, the main pillars usually rest on concrete, brickwork, or stone, and sometimes on all three in combination. When used in combination a concrete block is first laid, upon which several courses of brickwork may be built, and lastly a stone

slab placed on the top. It is not often, however, that all three materials are used together, one or two generally being found sufficient. The intensity of pressure on the ground underneath may be modified to the required extent by increasing the area of the concrete block, or by stepping-out to the necessary extent the lower courses of brickwork.

It is of great importance that the architect should be conversant with the working loads allowable on these materials.

The working pressure allowed on concrete foundations of sufficient thickness varies considerably according to the quality and the age of the concrete. Generally speaking, it may be taken as varying between 2 and 10 tons per square foot. It is not often, however, in work that has been executed that so high a pressure as the maximum mentioned exists, from 1 to 5 tons being most general. When pressures of 5 tons and upwards are to be provided for, great care should be bestowed on the manufacture of the concrete. All the materials composing it should be of good quality. All earthy substance, ashes, soft broken bricks, or greasy matter should be excluded; round smooth gravel or stone should be broken. The best Portland cement should be used; it ought to have a cohesive strength of 400 lbs. per square inch after seven days from mixing. The proportion of the different ingredients should be four parts of broken hard brick or stone, one of clean sand, and one of cement. The concrete should be turned over twice dry, and three times wet, and well rammed in 12-inch layers. It is not advisable to send the concrete down a shoot or drop it from a height, unless it is afterwards re-mixed, as the larger pieces fall to the ground first, the smaller pieces next, and last of all the cement. Whenever used under water, the water should be still; a current will carry away the cement and leave only the ballast.

The crushing strength of bricks varies considerably. It may be as low as 60 lbs. per square inch, and as high as 1,700 lbs. per square inch. Best blue bricks show a strength of 1,200 lbs., while Stour-bridge fine bricks will stand 1,700 lbs. or even more. When great pressures have to be borne, the latter, or others similar in strength, should be used. It is desirable in a brick foundation that not only should the quality of the bricks be good, but also that they should be properly laid in good cement. Each course as laid should be well rammed down and bedded, leaving the layer of cement between each course as thin as possible. When this is done it is extraordinary what a brick foundation will support.

In connection with the failure of the foundations of the German mill already referred to, I had some experiments made as to what loads a brick pier was capable of sustaining. The test was made on a block of good red brickwork 3 feet 1 inch by 2 feet 11 inches, and 1 foot 4 inches thick. It was built of five courses bedded in cement, the bricks being pressed close together, with a thin layer of cement between them, and allowed to set for ten days before the test was made. The bricks were made by Messrs. Smethurst, of Oldham (and some of similar quality were tested by Mr. D. Kirkaldy, who found that it took a pressure equal to 480 tons per square foot to crush them). The pier composed of these bricks was inserted between iron plates and placed in a hydraulic press, the area of pressure on the brickwork being 5.3 square feet. Pressure was gradually applied until it reached 622 tons, which is equivalent to about 117 tons per square foot. The pressure was not increased beyond this point, as the press was incapable of anything greater. After the brickwork was removed and examined it exhibited no signs of failure, and was apparently as perfect as it was before the test.

According to the Berlin building regulations, with ordinary brickwork set in lime mortar a load of 7 tons per square foot is allowable for a working pressure, while with good hard bricks laid in cement 11 tons per square foot is recognized. Generally speaking, in this country anything between 2 and 10 tons per square foot is the practice.

With iron or steel pillars resting on stone, brick, or concrete foundations, there is another very important matter, frequently lost sight of, which should receive careful attention, and that is the proper bedding of the base of the pillar. When it rests on a block of stone, the stone should be carefully dressed off to a level surface, and the bottom surface of the base of the pillar should also be true. Some engineers insist upon having the latter machined. Even with these precautions, in very important work a layer of sheet-lead might be introduced between the two surfaces. I remember several years ago when the present *Manchester Guardian* newspaper offices were being built a failure arising from improper bedding occurred. The main cast-iron pillars supporting this building sustain very great loads. One day it was discovered that one of the cast-iron base-plates was fractured, and also that the stone on which it rested was cracked. This occasioned a good deal of alarm for the safety of the building, and a celebrated London engineer was called in to report on the matter. He discovered that it arose from imperfect bedding. The top of the stone, instead of being tooled to a level surface, was hollow towards the centre, and the whole pressure was transmitted to two or three points towards the edges, which sufficiently accounted for the failure.

With concrete and brickwork foundations a good plan, when it can be adopted, is to bed the base in cement. This often can be done with a loose base, but in the case of steel pillars, where the base is an integral part of the pillar itself, it cannot be satisfactorily adopted. The *modus operandi* in such cases is to leave the surface

of the foundation rough, and place the pillar upon it with iron wedges inserted at the four corners. By means of these wedges the pillar can be raised to the right level and made plumb. When this is done, liquid cement should be carefully run underneath. This effectually fills up all inequalities and evenly distributes the pressure over the foundation. The cement should be of such a nature as to set hard, and may vary in thickness from $\frac{1}{4}$ inch to 1 inch.

A STEEL ROADWAY IN SPAIN.

THE road between Valencia and Grao is 2 miles in length, and an average of 3,200 vehicles pass over it daily. Until 1892, it was constructed of flint stone. The annual cost of keeping it in repair was about \$5,000 pesetas. At the rate of exchange at that date, this amounted to \$5,470.

The construction of a steel roadway was determined on, and the annual cost of keeping in repair the central zone of road thus relieved from heavy traffic — which proceeds over the steel rails — is now only 2,500 pesetas, or about \$380 at the present rate of exchange.

A Belgian firm received the contract to furnish the steel-work, having bid less than Spanish firms at Barcelona and Bilbao.

The length of road so built is 3.2 kilometres (1.988 miles). The cost per kilometre (0.62137 mile) was 44,100 pesetas (\$6,890).

The total cost of the road laid was 60,950 pesetas (\$9,506). The expense in detail was:

	Pesetas.
Steel construction.....	44,100 = \$6,890
Transportation and laying steel construction.....	3,250 = 507
Binding-stone construction between rails and lateral zones.....	13,600 = 2,109
Total.....	60,950 = \$9,506

The rails, during the seven years they have been in position, exhibit a wear of one decimal of a millimetre yearly, and have not required repairing.

Ample room is allowed between the rails for two horses to walk abreast. Horses do not appear to slip on rails of this construction.

At each side of the rail are layers of binding stones, the paved road being higher than the face of the rails.

The municipality of Valencia is of opinion that the saving in cost of repairs, through a road of this description, pays for its construction in a short time, and other and similar roadways are in contemplation.

From various parts of Spain, inquiries have been made concerning this road. I learn that a similar construction was decided on at Alicante, in 1898, but was temporarily abandoned when events caused exchange to increase.

A toll of (about) eight-tenths of a cent is charged each vehicle passing over this roadway.

A fuller description would have been furnished had it not been believed that the technically accurate working-plans submitted herewith would themselves prove of much greater information than unprofessional statements.

I am indebted to the mayor of Valencia and to Señor Mesegner, municipal architect, who invented the road, for copies of these plans.

HORACE LEE WASHINGTON, U. S. Consul.

VALENCIA, September 25, 1899.



MR. BRIGGS'S new book¹ seems to us to deserve a little blame, in connection with a good deal of praise. As a collection of dissertations on the art of arranging school-houses, in general and in detail, it will be useful to architects, while its suggestions in regard to the best way of securing competent professional advice may be particularly recommended to school-committees; but we cannot say that we think the plans fairly representative of the best American practice of the present day. A few years ago they would have been considered admirable, and two or three, such, for example, as that for a large High School and the City School Building, are quite satisfactory, or might be made so without difficulty; but such a plan as that for a State Normal School Building, which shows an interior corridor at least four hundred feet long, entirely enclosed, even at the ends, by rooms, and receiving no light and air from the outside except across the staircases, which, in practice, would have to be cut off from the corridor by brick walls to satisfy the law in many States, certainly does not represent what is now considered good school-house planning by the architects of this or any other civilized country. We do not say that this corridor would be dark, for Mr. Briggs has advanced far enough beyond the hallways lighted with gas, and the "rotundas," or pits, with a little skylight at the top, which give access to the class-rooms of the high and normal schools of the last generation, to provide plenty of borrowed lights in the

walls of his corridors; but the French and German and Swiss architects long ago showed us the advantages of school-houses with their corridors open on one side to exterior light and air, and those of their American brethren who concern themselves much with school-planning have learned this lesson thoroughly.

In other respects, nothing but commendation is to be given to Mr. Briggs's plans. The staircases are, in most of them, well separated, and the rooms are of a good shape, and properly lighted, and suitable provision is made for wardrobes and for ventilation; so that in these respects they well deserve study.

The text, also, supplements admirably the special information to be derived from the plans. Mr. Briggs has had much experience with the practical working of school-houses, and he talks about the defects and advantages of various arrangements of rooms, and appliances for heating and ventilation, with delightful frankness. One point that he makes is particularly worth remembering, although we think that it should be taken with a certain discretion. Speaking of indirect radiators, he says that he prefers a box-coil of ordinary pipe to any of the pin-radiators in the market, for the reason that the sections in the latter are set so closely together that the requisite quantity of air cannot pass between them. Our own opinion is that, while coils are much to be preferred to stacks of pin-radiators for the preliminary tempering of the air, the pin-radiators answer very well for the final raising of the warmed air to the temperature at which it should be delivered in the rooms; but heating contractors are rather disposed to use pin-radiators for tempering, and the architect should make sure, before approving them, that there is ample space between them for the required quantity of air to pass through, at such velocity as can safely be counted upon. In regard to steam-boilers, also, Mr. Briggs gives valuable hints. Like all experienced architects, he prefers the ordinary return-flue tubular-boiler to any other for school-house heating, where it can be properly taken care of. As he truly says, the market overflows with patent boilers, some of which, like the water-tube boilers, will, undoubtedly, make steam more quickly than the old-fashioned kind; but, as he points out, a boiler which will make steam quickly will also lose it quickly, and a sensitive boiler, while it is desirable for a fire-engine, is quite unsuited to school-house work, where steadiness and economy are required.

We will not quote further from the multitude of practical suggestions and warnings with which the book is filled; but a little anecdote which Mr. Briggs relates to illustrate the prevailing methods of conducting architectural competitions will be read with relish by the profession. He was once "invited," as one of six architects, to submit plans for a small building in a certain town in limited competition. In due time, three of the competitors, including himself, were requested to appear before the committee, at different periods, and explain their designs more at length. Not long afterwards, meeting an acquaintance from the town in question and knowing that the competition had not been decided, he asked him if he knew anything about the matter. "I only know this," replied his friend, "that that man from New York is getting the bulge on you fellows; he has been up here a number of times, has seen every one of the committee more than once, and has talked his plan and abilities into them so that he has the inside track; he's a hustler, he is. You are dead slow. I wouldn't let a fellow get ahead of me that way. I give you the tip; now go in and knock him out." Presumably, the "hustler" got the job, and Mr. Briggs forbears to say how he succeeded with it; but he uses the story as a text for some suggestions to committees which they would do well to take to heart; and, in fact, the whole book could be read with great advantage by school-superintendents, committee-men and intelligent teachers, as well as by architects.

AN ARCHITECT'S WEIRD ADVERTISING.

A CERTAIN firm of architects, who shall be nameless, are taking advantage of one of the many processes of reproducing letters in fac-simile, and are sending out broadcast the following alluring invitation to call upon them and order a few palaces.

Pinned to the *soi-disant* letter is a little snip of red ribbon, to which the opening paragraph is supposed to refer. As the letter is in a woman's handwriting the advertisers evidently count on the impertinent curiosity of men as to what other men's female belongings have to say:—

Tuesday Afternoon.

My Dear, — I am very sorry you had to go out of town so hurriedly last night and I write to remind you not to forget the errand I spoke of to you — twenty-seven yards — and it ought not to cost over eight cents a yard.

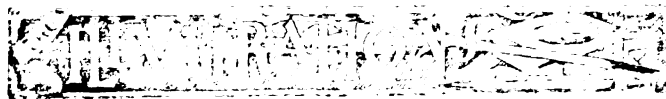
I love to have you talk to me about business matters the way you did, for I truly believe there is a great deal in a woman's judgment.

I want you to call to-day and see B. & G., the architects, in the G — Co's Bldg., about plans for our new house. I called on Nellie to-day (you know B. & G. were her architects). She and Ed. have the best arranged house inside I ever saw and the outside is perfectly lovely and you know it didn't cost near so much as Joe's and it's twice as handsome.

While you're there ask them the price of those L — apartments, corner Church and Ann Streets, and if they are not all taken have one reserved for George. He's to be married next month. Come home early.

Affectionately, DOLLY.

¹ "Modern American School Buildings," being a Treatise upon, and Designs for, the Construction of School Buildings. By Warren Richard Briggs, F. A. I. A., with 89 full-page illustrations. New York: John Wiley & Sons. \$4.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

EXTENSION OF THE HOTEL RENAISSANCE, FIFTH AVE. AND 43D ST., NEW YORK, N. Y. MESSRS. HOWARD, CAULDWELL & MORGAN, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

A COMPETITIVE DESIGN FOR THE CLUB-HOUSE OF THE NEW YORK YACHT CLUB, NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.: TWO PLATES.

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THE UENG GER TOWN-GATE, STENDAL, PRUSSIAN SAXONY.

[Gelatine Print.]

THIS fine structure dates its erection from the fifteenth century. The lower portion, quadratic in plan, contains two stories over the arched gateway. Its four corners are accentuated by prettily-modelled turrets, corbelled out from the brick walls, and connected by battlements, of lively and interesting outline. The upper portion of the gate-tower is round, being supported by arches placed diagonally across the corners of the square substructure. (Old engravings show the tower to have been capped by a conical, tile-covered roof which has in the course of time disappeared. The round top is decorated with an arched frieze, and crowned with battlements which have, not long ago, been subjected to a process of renovation by unskilled hands, which, as in many other instances, has deprived them of much of their original charm. The picturesque effect of the architectural scheme is enhanced by the color-treatment of the glazed brickwork standing out from the light-tinted rough-cast wall-surfaces. The granite base of the tower dates from the end of the thirteenth century, when the fortifications of the town were enlarged. A detailed description of this structure, together with plans and sections, may be found in Herr Felix Adler's "Mitelalterliche Backsteinbauwerke des Preussischen Staates," vol. I.

WROUGHT-IRON FOUNTAIN ON THE KLEINER RING, PRAGUE, BOHEMIA.

[Gelatine Print.]

THIS masterpiece of forged ironwork dates from the sixteenth century. Of especial excellence of workmanship is the central feature over the basin in the interior of the cage. Together with the neighboring town-hall and the Theinkirche, this fountain represents one of the chief ornaments of the most frequented public square of the Bohemian capital.

HORNSEY CENTRAL LIBRARY, HORNSEY, ENG. MR. E. J. LOVE-GROVE, ARCHITECT.

INTERIOR OF THE SAME.



REPAIRS AT THE CRYSTAL PALACE.—The Crystal Palace will always be an interesting object-lesson to engineers. It is true that were a similar work to be undertaken to-day different materials and different methods of construction would almost certainly be adopted; but in its day the Palace had a right to rank as a masterpiece, and the success with which a structure intended at the outset to meet merely a momen-

tary need has withstood the ravages of years reflects the greatest credit on its designers, Messrs. Fox and Henderson. During the past three months extensive repairs have been in progress at the Palace. The glass in the whole of the Central Transept is being replaced, the area to be covered measuring nearly two acres, or about one-seventh of the whole glazed surface of the building. It is interesting to note that the proportions of the original structure were largely controlled by the size of glass which it was possible to obtain in large quantities in the Exhibition year. The maximum dimension then commercially practicable proved to be 49 inches, and Paxton's ridge-and-furrow system being adopted, this was laid at a slope of 2 1/2 to 1, thus fixing the distance between the purlins as 8 feet, which became the unit for the building, all its principal dimensions being multiples of this. The glass originally used was the 16 ounce quality, and the strips were 10 inches wide and were fitted into grooves in wooden sash-bars. It was originally intended to use putty, but a machine devised for putting these sash-bars proved unworkable, and the plan was then adopted of passing the bars through a tank of thick paint. This paint was automatically scraped off the surfaces of the bars as they were removed, but the grooves in which the glass was to fit remained full, and on drying made a watertight joint between the glass and the sash-bar. Indeed, it is asserted that the joint was too good, from the point-of-view of the firm who took up the contract for removing the Exhibition building, as it proved practically impossible to break the joint without at the same time smashing the glass. When re-erected at Sydenham 21-ounce glass was substituted for that originally used, but the dimensions of the sheets and the methods of construction were unaltered. In the new work 26-ounce glass is being used, save in the case of certain flat portions at the crown of the arch, where 32 ounce glass is being inserted. In addition to being thicker, the new sheets are also of larger dimensions, measuring 51 inches by 18 inches. The whole of the old wooden sash-bars are being removed, as they were showing in many cases signs of decay, steel sash-bars being substituted, the glass being secured on the system patented by Messrs. Mellowe & Co., of Sheffield. The sash-bars are covered with a special section of tinned-lead and the glass being put in place is secured by simply bending down long flaps of the alloy. — *Engineering*.

THE PROTESTANT MEMORIAL CHURCH AT SPEYER.—In the year 1529 there assembled at the old German city of Speyer on the Rhine the Diet of the German Empire at the call of Emperor Charles V. This Diet was convened for the purpose of suppressing the religious reform movement, which had been started by Luther and other reformers. It would have succeeded with its plans had not a minority consisting of several princes and deputies of free cities boldly and in the face of the imperial ire proclaimed and formally delivered a written protest against such action. It is from this act that the present members of the non-Roman Catholic denominations derived their common name of Protestants. When it was first proposed, a few years ago, to erect a monument in memory of this heroic deed, it was decided to make this memorial representative of the Protestant faith in all countries without regard to the differences of the denominations. After some discussion, it was decided that a memorial church would most properly express the idea. Active work was commenced immediately, and a site was selected on an elevation of ground. A prize was offered for the best plans, and out of forty-five that were submitted, the plans of Messrs. Flügge and Nordmann, of Essen, Prussia, were selected. The plans were of the Gothic style of architecture, which is adhered to in the smallest details. The building has already progressed to the height of the roof. The sextangular tower is expected to reach a height of 300 feet. The ground-floor of this tower is to constitute a memorial hall, 35 feet in diameter and 60 feet high. When the church is completed, the visitor on entering through the beautifully carved portals will find in the centre a bronze statue of Martin Luther. The figure will be 9 feet high without the base. With his left hand he clasps the Bible to his breast, while with the outstretched right he seems to sweep away religious prejudice. He will be surrounded by the figures of the six princes who signed the Document of Protestation. These statues are the gift of their descendants. The corners over the portals will be decorated with the coats-of-arms of the fourteen protesting cities. The wall over the entrance to the main part of the church will be decorated by a colossal fresco painting, representing the delivery of the Document of Protestation by Prince John, elector of Saxony, to Ferdinand, King of Bohemia, who presided over the Diet at Speyer. All the windows have been presented by the Protestant princes of Europe, the German emperor and empress having given five of them. The organ will be presented by German church choirs, who are giving concerts for that purpose. The church will easily seat 1,400 people, and its cost will be nearly two million marks (about \$500,000). For the erection of this memorial to Protestantism widely extended coöperation is desired. — *Boston Transcript*.

THE CLIFF-DWELLINGS IN COLORADO AND NEW MEXICO.—Commissioner Herman, of the General Land Office, has authorized a special commission to report on the ruins of the cliff-dwellers in the vicinity of Mancos and Cortes, Col., and also near Aztec, New Mexico, with an idea of reserving the lands as a national park. This action has been taken as the result of an agitation in Colorado for the protection of these ruins against vandalous relic-hunters. Some of the best preserved of the ruins have been ruthlessly entered by curio-hunters during the last few seasons. No regard has been paid to the best means of opening the ruins with a view of preserving the buildings entire. Walls and roofs have been broken into and mummies and relics carted away. With these ruins guarded by the Government and given over to the investigation of experts, they may yield a mine of information about the lost race, while at the same time they will be preserved for the benefit of the public. Fortunately, some of the best ruins have not yet been touched, and these can be opened at the doorways made by the ancients, after the accumulated rubbish has been carefully removed. — *N. Y. Evening Post*.

10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044

